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ILLUSTRATIONS.

The Government House, Rangoon.—Mr. H. Hoyne Fox, A.R.I.B.A., Architect ..... *Two Single-Page Tone-Blocks.*
The Dining Room, Paddockhurst—Mr. Aston Webb, F.R.I.B.A., Architect ..... *Double-Page Ink-Photo.*
Detail of End of Dining Room, Paddockhurst.—Mr. Aston Webb, F.R.I.B.A., Architect ..... *Double-Page Ink-Photo.*
Proposed Town Hall, Godalming: Selected Design.—Messrs. Lanchester, Stewart, & Rickards, Architects ..... *Double-Page Ink-Photo.*

Blocks in Text.

Design or Stained Glass: "St. Cecilia" ..... Page 428
Government House, Rangoon. Plan ..... Page 432
Model By-Laws and Local Requirements ..... Page 436

CONTENTS.

Disinfecting Stations 421
Kew Observatory A Historical Sketch 422
Notes 423
The Royal Institute of British Architects 424
Singapore Town Hall and Theatre Competition 427
Engineering Societies 427
"St. Cecilia": Design for Stained Glass 428
Magazines and Reviews 428
Architectural Societies 429
Archæological Societies 429
The Metropolitan Asylums Board 430
The Architectural Association Discussion Section 430
The London County Council 431
The Government House, Rangoon 432
Dining-room, Paddockhurst 433
New Town Hall Godalming 433
Sanitary Inspectors' Association 433
Liabilities and Rights of Owners in Respect of the Drainage of Buildings 433
London Building Act, 1894 434
West of England Building Trade Employers 434
Books: Rev. P. Dearmer's "Wells, the Cathedral and See;" Austin T. Byrne's "Inspection of the Materials and Workmanship Employed in Construction;" Frank Latham's "The Sanitation of Domestic Buildings;" Dr. Lassar Cohn's "Chemistry in Daily Life;" C. T. Kingzett and D. Homfray's "A Pocket Dictionary of Hygiene;" "Electrical Installation Rules;" E. A. P. Burt's "Guide to Round Timber Cubing Rule, and Round Timber Measurement Weight Tables for Railway Rates;" Frederick C. Webber's "Carpentry and Joinery;" "Catalogue of Works Exhibited by Members of the Northern Art Workers' Guild, Manchester with Chapters on the Crafts;" John P. Seddon's "King René's Honeymoon Cabinet" 434
Trade Catalogues 436
Books Received 436
Godalming Town Hall Competition 436
Model By-laws and Local Requirements 436
The Student's Column.—Sound, Light, and Heat—XIX 437
General Building News 437
Sanitary and Engineering News 440
Stained Glass and Decoration 440
Foreign 440
Miscellaneous 440
Capital and Labour 441
Legal 441
Meetings 441
Recent Patents 441

Disinfecting Stations.

ARCHITECTS and Borough Surveyors will probably find the most useful portion of Dr. Rideal's treatise on "Disinfection and Disinfectants"* to be that part of Chapter III. which deals with the building and equipment of public disinfecting stations; but there are other chapters on sanitary practices and sanitary law which of themselves will render the work a valuable addition to the architect's library. The inclusion of a plate of the drawings, by Mr. Rowland Plumbe, of the disinfector house and incinerator at St. Mary's, Newington, also enhances the value of the book; for although, as Dr. Rideal points out, this building has had to be adapted to its environments, yet it is a fairly representative disinfecting installation of the most modern type.

In a town built on a sanitary site, with ideally perfect sanitary arrangements and surroundings, and inhabited by a cleanly and intelligent people, the necessity for the use of disinfectants and disinfecting processes would be reduced to a minimum; but, unfortunately, no such town exists, and the necessity for counteracting and destroying as far as possible the baleful products resulting from overcrowding, from ignorance and apathy regarding the laws of health, and even from open uncleanliness, has raised the art of disinfecting, or destroying disease-producing germs, to one of primary importance in all centres of civilisation.

It is now known that the fundamental agents in spreading contagious diseases are those minute organisms which are classed under the somewhat comprehensive term *bacteria*. Unfortunately bacteriology is but a very modern science, and much has yet to be learnt regarding bacteria in general, and regarding the characteristics of each species of bacteria in particular; and that bacteriological research is not unattended with danger has been again demonstrated quite recently by the tragic events which have occurred in Vienna, where investigations by expert hands into the nature of the bubonic plague organisms have resulted in the accidental infection and death by plague of Dr. Müller and several attendants.

Our present knowledge of bacteriology indicates that bacteria exist in a great variety of forms, and that while some are harmless, and possibly beneficial to human life, others are mortal enemies; but until our knowledge regarding these organisms is far more extensive and complete than at present, the only safe treatment for infected matter will be complete sterilisation, destroying alike the noxious and the innocuous germs. It is with this object that all modern disinfecting methods, both physical and chemical, are employed.

During the last decade the practice of erecting public disinfecting stations in densely populated districts has been extensively spreading not only in this country, but in America and on the Continent, and the provision of at least one disinfecting chamber is now commonly required in public institutions, such as hospitals and casual wards. Figures 18 and 19 in Dr. Rideal's treatise show the arrangements described by Mr. H. Francis, of Philadelphia, as those adopted in the most modern disinfecting stations of the Marine Hospital Service of the United States Government. The arrangements are very complete, and provide for disinfection by heat, by fumigation, and by chemical disinfectants. It is worthy of notice that in the United States, when sulphur dioxide is used for fumigation, it is recommended that 3 lbs. of sulphur should be burned for every thousand cubic feet of air to be disinfected, whereas in this country it is unusual to employ more than half that quantity of sulphur for the same area; and this notwithstanding the fact that Dr. Koch and others have expressed the opinion that sulpur dioxide is of little value as a disinfectant.

As a matter of fact, when sulphur dioxide is to be employed it is commonly produced now by vaporisation of the liquefied gas. When sulphur dioxide gas is subjected to a sufficiently high pressure, it condenses to a liquid, and this liquefied gas is now sold in receptacles of various sizes. A form much used by sanitary inspectors is a cylinder containing about 20 ozs. by weight of the liquid. The operator cuts off the lead vent pipe at the top of the cylindrical tin, and places the tin with the outlet inclined downwards in a wash-basin, so that the liquid will flow out. The liquid rapidly returns to the gaseous condition, and is commonly supposed to produce sufficient gaseous sulphur dioxide to effectively disinfect a room having an area of 1,728 cubic ft. (12 ft. cube). For the disinfection of bedding, clothes, and other portable articles it is now generally admitted that subjection under pressure to superheated steam is the best treatment; but there is still much difference of opinion as to the most suitable temperature to employ, the object being to cause complete sterilisation without in any way injuring the goods. As most of our readers are aware, the disinfecting machines most commonly used in this country are various forms and modifications of the Washington-Lyon apparatus. Some are of cylindrical shape and have an apparatus for producing a vacuum in the disinfecting chamber before injecting the steam.

"The main feature," says Dr. Rideal, "of a disinfector house is that there shall be two rooms; one permanently kept for infected goods, and the other for disinfected goods. The machine is built in the wall dividing the two rooms, and is fitted with two doors, one door opening into each room. These doors should never be open at the same time, and there should be no direct inter-communica- whatever." This is correct, but the author might also with advantage have drawn attention to the necessity, sometimes neglected, of so arranging the passages, entrances, and exits of the station that goods after disinfection need never be carried over the same ground, or through the same doorway, as that by which the infected goods are admitted.

At Newington an incinerator has been placed upon the same site as the disinfecting apparatus, and although this is not yet usually regarded as part of a disinfecting plant, it is frequently very useful for destroying by fire infected materials that are not worth disinfecting. It is, however, of great importance that the furnace should be so constructed that it is impossible for incompletely burned particles, and objectionable gaseous products of incomplete combustion, to escape up the flue into the atmosphere.

Dr. Rideal devotes considerable space to the discussion of the utility of formaldehyde

* "Disinfection and Disinfectants," by Samuel Rideal, D.Sc. (Lond.). Second Edition. London, 1898. The Sanitary Publishing Company, Limited. Price 12s. 6d.

(formic aldehyde or "formalin"), the disinfecting material that is now so extensively employed. He classes the methods of utilising it in the following three divisions:—

1. Spraying the walls, ceiling, and floor with the solution.

2. Atomising the vapour from a calcium chloride solution of formaldehyde under pressure in an autoclave.

3. Vaporising paraformaldehyde by means of heat in the presence of water vapour produced from the products of combustion of methylated spirits.

He then proceeds to describe the various forms of apparatus employed for its application.

In the chapter on mechanical disinfection attention is drawn to experiments which have proved that light, especially in the presence of air and moisture, is of considerable value in checking the development of bacteria. Hence bacteriology constitutes yet another witness to the value of abundance of light and air in buildings, and to the foolishness of the old tax on windows.

To the general reader the chapter on Practical Methods will probably be of most interest, although part of it is of rather a cursory nature. A considerable portion of the volume is naturally of interest to specialists only, and it is to them that the sanitary bibliography at the end of the book will be most useful. As it is well printed and lucidly written, Dr. Rideal's treatise is worthy of the rank it has obtained as the standard English work on disinfectants and disinfecting processes.

KEW OBSERVATORY: A HISTORICAL SKETCH.

THE Committee appointed by the Treasury to consider the desirability of establishing a national physical laboratory have reported in favour of developing the work done at Kew Observatory. They recommend that the buildings there should be improved and extended, and converted, under the Royal Society's control, into a public institution for standardising and verifying instruments, for testing materials, and for the determination of physical constants.

It is not generally known that the Observatory in the Old Deer Park was erected by George III. for facilitating observations of the transit of Venus on June 3, 1769, to observe which phenomenon Captain Cook and Sir Joseph Banks sailed in the *Endeavour* to Otaheite. Sir William Chambers was architect of the building. The ground had been cleared by razing the hamlet of West Sheen. The Observatory, distant about 350 yards from Isleworth Ferry, covers the site, in part, of the extensive buildings of the Carthusian House of Jesus of Bethlehem at Sheen, founded, together with St. Bridget's Nunnery at Sion, on the opposite shore, by Henry V. in 1414, in expiation for Richard II.'s deposition and death. Its stone superstructure rests upon vaulting built of thin and narrow red bricks of the kind found in the wall of Richmond—or, rather, Sheen—Palace, the basement being surrounded by three lines of brickwork to resist vibration. The wings of the south-west front are two floors high; the central portion has a three-sided bay and a third floor with a dome for the equatorial, now used for the photo-heliograph. The clock, by B. Vulliamy, was since deposited in the Patent Museum, South Kensington. To Dr. S. Demainbray, first superintendent, succeeded, in 1782, his son, the Rev. S. Demainbray. George III. often visited the Observatory, A volume of the King's prints and drawings in the British Museum contains an interesting set of coloured drawings, each bearing the written signature, "James Adam, architect, 1770," of the elevation, with four plans and a section, of a "building proposed to be erected by his Majesty at Richmond for a Register of the Weather." The building, circular on plan, has a colonnade of six pillars, in pairs, with cornice and open balustrade, is 35 ft. in diameter and 43 ft. high to the roof, which carries three cupolas.

The establishment of an observatory at Kew was perhaps prompted, in the first instance, by certain precedent events. Samuel Molyneux (1689-1728), astronomer and politician, had been secretary to the Prince of Wales until his accession as George II. In 1717 Molyneux married Lady Elizabeth Capel, daughter of Algernon, second Earl of Essex, who brought him a handsome fortune, increased by her inheritance of Kew House on the death, in 1721, of her kinswoman Dorothy, daughter and heir of Richard Bennet, and widow of Sir Henry Capel, second son of Arthur, first Baron Capel, of Hadham, beheaded in New Palace-yard on March 9, 1649. Sir Henry, Lord-Lieutenant of Ireland, was created (1692) Baron Capel, of Tewkesbury, and died, *s.p.*, 1696. Evelyn visited him at Kew:—

> 27 Aug. [1678] . . . din'd at Mr. Hen. Brouncker's, at the Abby of Sheene, formerly a monastery of Carthusians, there yet remaining one of their solitary cells with a crose. Within this ample enclosure are several pretty villas and fine gardens of the most excellent fruites, especialy Sir William Temple's (lately Ambassador into Holland), and the Lord Lisle's, sonn to the Earle of Leicester. . . . After dinner I walk'd to Ham, to see the house and garden of the Duke of Lauderdale . . . Hence I went to my worthy friend Sir Henry Capel (at Kew), brother to the Earle of Essex; it is an old timber house, but his garden has the choicest fruit of any plantation in England, as he is the most industrious and understanding in it.

Evelyn records other visits in 1683 and 1688, mentions the repair of the house, and the orangery and myrtelum. Molyneux went to reside at Kew House, where he fitted up an observatory. There, in 1723-5, he and James Bradley resumed Hooke's attempts to determine stellar annual parallax, using a zenith-sector of 24 ft. radius, with a small arc and showing single seconds by a vernier, supplied by Graham. Other observations (of γ Draconis) made by them at Kew House in 1725-7, and continued by Bradley at Wanstead, led to the latter's two great discoveries—the aberration of light and the nutation of the earth's axis.

Molyneux's widow married the notorious empiric, Nathaniel St. André; after her death on May 27, 1730, Kew House—also known as the White House, and afterwards as the Old Palace—was leased to Frederick, Prince of Wales. George III. bought the freehold from the Capels in 1781. In 1731 Kent had made additions to the house; he designed the ornaments of the gallery, with some chimney-pieces, and painted the cabinet, drawing-room, and great staircase ceilings. In 1757-62 Chambers laid out the flat and barren demesne for Augusta, Princess Dowager of Wales, designing the old Orangery (since a museum for ligneous specimens), the several Temples, the Mosque, Alhambra, Pagoda, Gallery of Antiques, Ruins, covered seats, and (after Palladio) the bridge to the island in the lake, as described and illustrated in two of his books.* We should cite, too, Jean Rocque's rare surveys of 1734 and 1748, giving elevations of the Dairy House, King's Palace, and Kew House; W. Woollett's set of fine prints of White (Kew) House and the lake, with its huge swan; a view (1776) by P. Sandby, R.A., of the Prince's House; the aqua-tints (1798) of White House, &c., after F. I. Mannskirsch; and a large-scale plan, drawn in 1771, by Peter Burrell, H.M.'s Surveyor-General. These, with many others after their kind, formerly belonged to the Royal collection.

Some repairs at Kew House were carried out by James Wyatt, who in 1802-11 erected a new palace for the Sovereign. That extraordinary structure, built for the most part of cast-iron (after his own invention, patented in 1808), cost 500,000*l.*, with 500*l.* yearly for current repairs; it was never completed, and ultimately pulled down in 1827-8. Meanwhile Kew House was demolished (1803-4); on its site King William IV. set up a sundial, bearing an inscription which does less justice to Molyneux than to Bradley. The dial stands on the lawn in front of the "Dutch House," latterly known as Kew Palace—the "Queen's Lodge" of Fanny Burney's diary. The Dutch House, whose fee-simple was purchased for Queen Charlotte, was built *temp.* James I. on the site of the "Dairie House" by Sir Hugh Portman, a trader to Holland, cited in the Sydney Papers (1595) as "the rich gentleman that was knighted by her Majesty at Kew." This is the palace which, in January last, the Queen resolved to open as a public museum attached to Kew Gardens. The pleasure-grounds of Kew House were planned by Kent and Bridgman, and further improved by Lancelot ("Capability") Brown.

Thus the Botanical Gardens at Kew, as we know them, covering an area of 297½ acres, had their origin and increase in the Royal garden upon which Sir Joseph Banks and the gardeners John Haverfield, W. Aiton, and his son bestowed so much care. In 1840, being then but eleven acres in extent, they passed to the charge of the Woods and Forests Department, under the directorship of Sir W. Jackson Hooker. That same year the observatory was committed to the British Association for the Advancement of Science, whilst most of its contents were distributed to Armagh Observatory, King's College, and the College of Surgeons, London, the British Museum, and members of the Royal Family. Under the British Association it became the central place of observation and record of the Meteorological Committee. In June, 1871, the late Mr. J. P. Gassiot, F.R.S., presented securities to the value of 10,000*l.* in trust to the Royal Society in order that they might take over the Observatory, and there continue magnetical and meteorological observations with self-recording instruments, the late Sir E. Sabine taking a leading part in the scien-

* "Treatise on Civil Architecture," fo. 1759; and "Plans, Elevations, Sections, and Perspective Views of the Gardens and Buildings at Kew," fo. 1765. Goupy designed the Temple of Confucius, and Kent the adjacent semi-octagonal seat; Sir Jeffry Wyatville the Doric "Pantheon"; Decimus Burton the Great Palm and Winter Garden Houses, and the entrance gates, Kew Green; Sir James Fergusson was honorary architect of the gallery (1880-2) for Miss Marianne North's collection of botanical paintings.

tifical operations until his death in 1883. The work now carried on at Kew is of a most multifarious character, and extends to the instruction of observers, the study of sanitation and ventilation, a record of sunspots from November, 1825, scientific photography, the verification of geographical, nautical, and other instruments, trials of watches and chronometers, and testing of thermometers, hydrometers, range-finders, sextants, &c., for our own and foreign governments. Hitherto, we understand, the institution has been self-supporting, yet State aid must clearly be forthcoming under the proposed altered conditions.

NOTES.

Peterborough Cathedral.

At a meeting held at Peterborough on the 3rd ult., in aid of what was defined as "The Cathedral Restoration Fund," the Bishop of Peterborough referred to "the care and skill with which the work of the restoration of the fabric of Peterborough Cathedral had up to the present been carried out," observing that he felt convinced that he was only putting into words the general feeling of many hundreds and thousands in saying that they were now prepared, before the whole world, to vindicate completely the steps so perseveringly adhered to by the Dean and Chapter; and he was fully justified in saying so. But the words which (as reported in the daily papers) he subsequently used, "whether it was not possible, before the new century dawned upon them, to see Peterborough completely restored," have rather an ominous sound. Why not, at all events use the word "reparation" instead of "restoration." That word would correctly describe the recent work on the west front of Peterborough, which was not "restoration" in the commonly accepted sense of that word, otherwise we should not have supported it. 10,000*l.* is still required, it appears, for the necessary work to the remainder of the west front. If that work is to be carried out in the same spirit as what has already been done, the 10,000*l.* will be well laid out. But do not let us hear of "restoration."

Making the best of the Eiffel Tower.

The Eiffel Tower is to be "treated" with the view of rendering it more presentable and acceptable at the 1900 Exhibition. The lifts now in use are to be replaced by lifts "à grande vitesse" and with increased accommodation. The restaurant and concert room erections on the first platform are to be removed and the platform left clear. The "circular gallery" is to be widened by two mètres all round, and the public are to be admitted to the top gallery also. The whole of the ironwork is to be painted a blue-grey tint, resembling the treatment of the iron-work in the "Beaux-Arts" and "Arts-Libéraux" Palaces of the last Exhibition. The tower, which has hitherto only been lighted with gas, is to have an illumination of 10,000 electric lamps. Unfortunately, these changes will do little or nothing to ameliorate the general ugliness and the outrageous scale of this too-celebrated structure. It is to be hoped that after the 1900 Exhibition, at all events, it will be removed altogether.

The Dover Harbour Work.

The recent delays of the steamboat service between Dover and Calais are becoming a serious public inconvenience. Until recently travellers could rely on getting into and out of Dover in the worst storms. Now unfortunate passengers are detained in the bay, or in hotels on shore, until a gale is over. It would appear that the new harbour works are responsible for this, and the fact merits the careful attention of the Government, for whom these works are being constructed. Whether the present effect of the new works has been contemplated by those who have designed these works we know not, but it is to be hoped that if the effect can be quickly obviated by expedition in the construction, every measure will be taken to press it on. If there is any probability of the present state of things becoming permanent it will be disastrous to the passenger traffic, not only between England and France, but between England and all parts of the Continent, and even India.

Manchester to Marylebone.

Last Monday the Great Central Railway Company ran their first through passenger train from Manchester to London. Thus, the dream of many a long year becomes an accomplished fact, and another trunk line is added to the list of those serving the metropolis. As the "Manchester, Sheffield, and Lincolnshire," this line has had the reputation of being a very unfortunate one, and anything but a remunerative one for the ordinary shareholders. But it has been in the hands of directors of indomitable pluck and perseverance, as this bold extension abundantly proves. Monday's journey was in the nature of an experimental trip, only the genial and energetic General Manager (Mr. Pollitt) and a few other officials of the company being on board. It is understood that they were thoroughly satisfied, and that the train ran into the Marylebone terminus "punctually to schedule time." We may express a hope that this may be the case when ordinary individuals come into town by the Great Central, and that certain other lines that could be named would endeavour to follow so commendable an example.

Highworth Workhouse Competition.

Four correspondents have sent us copies of the Instructions to Architects issued by the Highworth and Swindon Union, for a competition for extension of their workhouse. The instructions demand that each competing architect should furnish drawings to $\frac{1}{8}$ in. scale, "to be accompanied by a complete specification, priced quantities, and estimate of the total cost of the works," and in the case of the selected design the drawings, specifications, quantities, and estimate, are to become "the absolute property of the guardians." The drawings and specification are to show the exact means of ventilation and heating proposed. The following conditions are added:—

"The selected architect's charge for drawings, attendance at Local Government Inquiry, furnishing all particulars, necessary plans, specifications, and information required by the Local Government Board or their Inspector, all sets of tracings for working, all detailed drawings and general superintendence of the works, to be 5 per cent. on the amount of the building contract, provided that if the lowest tender received exceeds the said sum of 3,000*l.*, the architect's commission shall be reckoned and paid on that amount only. The commission to include all travelling and other expenses. No percentage to be paid upon the cost of any works charged by the contractor as extras, unless such extras are of the nature of additional works especially approved and ordered by the Guardians. A clerk of works will be employed, but the architect will be required to take a general superintendence, and to visit the works at least once a fortnight during the progress.

A plan of the completed buildings showing all drains, water and gas pipes, suitable for mounting and hanging in the Board-room of the Workhouse, to be furnished without any extra charge. . . .

The Guardians do not bind themselves to accept any or either of the plans which may be sent in."

What kind of architects do the Guardians suppose will compete on such terms? We may add that the cost is not to exceed "about 3,000*l.*" (*sic*), for which there are to be provided fifty additional beds to the men's hospital, including separate ward for special cases, and a boys' ward; a new women's ward for eighty beds, including separate ward for special cases, girls' ward, and lying-in ward; and provision for the accommodation of four nurses and a small dispensary. Assuming the nurses' accommodation and dispensary at the modest sum of 500*l.*, that leaves 130 beds at 2,500*l.*, or about 19*l.* per bed! Now the average cost for a plainly built hospital may be reckoned at 200*l.* to 250*l.* per bed. Is the "3,000*l.*" a misprint for "30,000*l.*"? If not, the whole thing is absurd from first to last.

Topography of Finsbury-pavement.

We learn that the property in Finsbury-circus and London Wall, described in our "Note" of October 29, realised a rental of 17,200*l.* per annum, which is estimated to represent a freehold value of about half a million per acre. Between the site in question and Finsbury-pavement lies another property, also appertaining to the Bridge House Estates, and covering about 15,700 ft. superficial, which was purchased in June last by the Eastern Telegraph Company on a building lease of eighty years, at a ground rent of 7,100*l.* per annum. The latter property comprises a range of long-established livery stables, which some identify with the "Swan and Hoop" livery stables where Keats's father was foreman to Jennings, the proprietor. Some uncertainty, however, exists as to this. In their "Recollections of Writers," Charles and Mary Cowden Clarke speak of the "Swan and Hoop" as being "on the Pavement in Moorfields, opposite the entrance into Finsbury-circus"—that is, on the west side of the present Pavement; and in Lockie's "Topography," 1810, the Pavement, Moorfields, is described as "the west side of Moorfields, extending from Moorgate to Finsbury-place." Thirty-three years ago there was a "Swan and Hoop" public-house (perhaps the old livery stables) at "No. 28, Finsbury-pavement;" the "Finsbury-pavement" of 1865 fronted the Southern part of Finsbury-place, South; whilst since 1865, Finsbury-pavement has been extended (by name) northwards to include (old) Finsbury-place, and thus to reach as far as Finsbury-square, and the houses have been renumbered. The confusion arises from the neglect of the fact that the "Pavement" of Jennings's and Keats's day was but a part of the present "Finsbury-pavement," which does not appear, by name, in the maps until about twenty-five years after Keats's death in 1821.

Rotatory Converters.

The paper by Professor Silvanus Thompson on "Rotatory Converters," which was read at the opening meeting of the Institution of Electrical Engineers, is a very valuable and

timely one. By rotatory converters Dr. Thompson means that class of electric machine where an alternating current enters the revolving part by two collecting brushes, and leaves it by another pair of brushes after having been converted into a continuous current, or *vice versâ*. Many of these machines are in every-day use for the transmission and distribution of power for motive and railway work, as well as for lighting purposes. At Niagara, for example, they are used to convert the alternating current generated at the Falls into continuous current for the manufacture of caustic soda and aluminium, whilst at Dublin and Rome they are used for traction purposes. There will be four of these machines on the new Central London Railway, each of more than twelve hundred horse-power. Naturally, therefore, electricians are curious as to their theory and working. Dr. Thompson's paper will satisfy this curiosity to a great extent, and we can congratulate him on having filled up this gap in our electrical literature. He has given very simple graphical explanations of many difficult points in the theory. Although there is not a single formula in algebraical symbols given in the paper, yet all the necessary formulæ are shown in graphical form by geometrical diagrams. Shown in this form his mathematical theorems appear almost self-evident, and only those who have been recently attempting to solve those problems can fully appreciate his excellent solutions. His graphical method of superposing currents is a novel one, and will be most useful for teaching purposes. By its means he shows very simply why the various coils of the armature of a converter are unequally heated. It also shows clearly the variable armature reaction, and hence is of use in explaining why converters do not run well in parallel.

St. Mary's Church, Moorfields.

A SUM of 200,000*l.* has been recently offered for this church, its site being required for other purposes, and the Temporal Council of the Westminster arch-diocese have asked for the Pope's consent to the disposal of the fabric and its site. Cardinal Wiseman chose St. Mary's for his pro-cathedral in 1852. It stands at the corner of East-street, Finsbury-circus, and was built in 1817-20 from John Newman's plans and designs at a cost of 26,000*l.*; it is illustrated in Britton and Pugin's "London." The church, 125 ft. by 98 ft., and 52 ft. high, has three aisles, each of which terminates in a chapel. On the rounded wall, behind a screen of marble columns, is Aglio's mezzo-fresco (begun upon wet plaster and finished in tempera) which he repainted in 1837*; he painted also the ceiling frescoes. Forty years ago the interior was altered, repaired, and redecorated, and a sanctuary was added. It is estimated that in the adjoining burial-ground and in the vaults as many as 5,500 persons were interred; in the catacombs lie Bishops Poynter, Bramstone, and Gradwell. The remains of Weber, laid in the vaults on June 21, 1826, were removed, in 1844, to the churchyard in the Friederichstadt, Dresden. The "No Popery" rioters of 1780 destroyed the earlier Roman Catholic chapel and presbytery in Little Moorfields, which stood in Ropemaker-street; the congregation migrated to a house in White-street, close by, where they remained until the opening of St. Mary's in 1820.

* *Vide* Eugenio Latilla's work on Fresco, 1842.

Mr. Oliver Hall's Exhibition.

THE letters "R.E." after Mr. Hall's name on the catalogue of his works do not signify that he is a member of the corps of Royal Engineers, but of the Royal Society of Painter Etchers, who ought however to adopt the form "R.S.E." or "R.S.P.E.," since "R.E." by common use and consent belongs to the distinguished corps referred to. The exhibits are not etchings in this case, but a number of broad, fine, and bold landscape studies in oil and water-colour, on a small scale but showing remarkable power; and a series of lithographs which are just as good in their very different way, showing that Mr. Hall fully understands the value of reserve, of not overworking, in this form of artistic production. An admirable example of this is the small lithograph of "King's Lynn" (49), like an etcher's work done into lithograph; but all the lithographs are excellent as examples of this class of art. Among the other works those that are exceptionally fine are "Broughton Moor" (16), which is like David Cox over again; "Torver Fell" (17); "Bridgenorth" (26), and "Bringing Home the Sheep" (36), the last quite a poem in landscape. It is an unexpected and a delightful surprise to go into a gallery and find such work as this from an artist one had only before known as an etcher.

Drawings by Mr. H. Brabazon.

THIS exhibition of a set of impressionist sketches by an amateur, at Messrs. Boussod & Valadon's gallery, is introduced to the public by an extravagantly laudatory notice by Mr. J. S. Sargent, prefixed to the catalogue. We have the greatest respect for Mr. Sargent's gifts as an artist, but we decline to have his opinions thrust upon us; and a comparison between his expressions in the catalogue, and the works exhibited on the wall, leaves the visitor in doubt whether a trick is not being tried on his credulity. Mr. Brabazon's drawings are simply brush-smears with a feeling for colour. In some cases it would be impossible without the catalogue to say what the drawing (?) was meant for at all. Let the reader look at "Sunset on the Riviera" (20), "In Rome" (30), "Sunset after Rain" (47), "On a Scotch Moor" (88), and ask whether such painter's smudges have any claim to be called art. Buildings, where inserted, are all tumbling about instead of upright. The one called "A Rose" (53), a still-life sketch, is an admirable bit of colour; but the so-called landscapes are little better than a pretence. Almost any one could be a landscape artist at this rate.

The Boadicea Statue.

AT the meeting of the London County Council on Tuesday the Report of the Highways Committee recommending the expenditure of 1,100*l.* in making the necessary alterations to enable the Boadicea group to be placed in position was formally withdrawn, in consequence of the receipt of a letter from the Office of Works asking for particulars in regard to the work, and pointing out that, under statute, it was necessary for the Office of Works to give their sanction before any statue could be erected in London. The Office of Works would do us, artistically, a public service if they would refuse their consent to the erection of a group of sculpture which is very unsuitable for the proposed position, and which represents a standard of English sculpture much below that of the present moment.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

OPENING MEETING OF THE NEW SESSION.

THE first general meeting of Session 1898-99 of the Royal Institute of British Architects was held at the meeting room of the Institute, 9, Conduit-street, W., on Monday evening. Professor Aitchison, R.A., the President, occupied the chair.

The Hon. Secretary (Mr. William Emerson) announced the decease since the last meeting of the following members: Major Alfred Heales, Hon. Associate, elected in 1882; Henry Hewitt Bridgman, elected Associate 1871, Fellow 1883; and John Gillett Livesay, elected Associate 1882.

Mr. Emerson further announced that Mr. William Nicholson Cumming, of Edinburgh, had been reinstated an Associate. He also stated that a statutory examination of candidates for the office of District Surveyor under the London Building Act, 1894, was held on October 27 and 28. Three candidates were examined, and the following gentleman passed and had been granted a certificate of competency to act as District Surveyor in London, namely: George Henry Blagrove, of 7, Mornington-crescent, Regent's Park.

The late M. Charles Garnier.

The President thanked the members for the courtesy and kindness with which they had supported him during the past year, and said he felt highly flattered at the thought that they considered that he had done his duty in the position of dignity and honour. The President went on to remark that since their last meeting the profession had, by the death of M. Chas. Garnier, sustained a great loss, about which it behoved him to say a word or two. The Institute did the late M. Garnier the honour to confer upon him the gold medal at their disposal. Of him it certainly might be said that he gave fresh expression to French architecture—an expression which never before had been seen. French architecture had peculiarities of its own, but the late M. Garnier added a new leaf to its laurels, and they all felt extremely sorry for the misfortune of his being taken away—not at an early age, it was true, but still long before they could spare the light that he could give to the whole civilised world. When they thought that the architect of the great Library at Venice lived to the age of ninety-three and had not taken to spectacles, they might well have hoped that M. Garnier would have been spared longer. But he was a man of nervous temperament, and his health could not survive the arduous work. He was sure they would pass a vote of condolence with France and with the French Academy on their great loss.

President's Address.

The President then read the following address:—

Brother Architects, Ladies and Gentlemen,—

I think we may be congratulated on the improvement that is taking place in the appearance of London. It is a great triumph for architects to think that they are converting a rather dull city, mostly composed of brick walls with holes in them, into a town almost as picturesque and varied as the old towns of France or Flanders.

I think it was in the forties that Professor Cockerell, at the Royal Academy, gave the approximate number of the new churches and public buildings that had been erected in the preceding thirty years; but that list, astonishing as it was, would dwindle into insignificance beside the new buildings that have been erected in and around London within the same lapse of time.

Of very important buildings in the centre of London there have necessarily not been very many, but in the outskirts numberless town halls, technical schools, and other municipal buildings have sprung into existence; and, though I am afraid we can hardly claim for most of them that they have rivalled the picked examples of the world's architecture, they mostly have some stateliness, picturesqueness, or originality.

I regretted to read the remarks of Mr. Norman Shaw, who has been acting as one of the assessors on the designs for the buildings of the Californian University. He said that "The competition had been held in the hopes of discovering some architectural genius, but in this it had failed," and he felt "a twinge of national regret when no English name appeared among the selected eleven;" the plans selected were without exception of the French school. "Architecture," said Mr. Shaw, "is more thoroughly taught in France than in England;" "at the same time French teaching destroys individuality." It is a matter for regret that an English-speaking race should have to go to our neighbours for their architecture, but that may be because there is more architectural genius among our neighbours across the Channel than amongst the English-speaking countries on both sides of the Atlantic and in the Pacific; yet it is peculiarly unpleasant that a celebrated English architect can justly speak of a more thorough teaching being given in France. One naturally asks, Why is this? For one would think that what is teachable could and ought to be as well taught in England, America, and Australia as it is in France; at any rate the first thing that the English architects should do is to see that this inefficiency is corrected. I can hardly believe that teaching, if not carried far enough to stifle independent thought, can extinguish individuality, for certainly some of our great poets were the best educated men of their day. As far as we know we cannot give ourselves genius, but it is most probable that, if a large number of persons will acquire that which a good architectural education can give them, there will be a genius among them; and surely a well-taught genius is better than an ill-taught one.

There is a most interesting book written by M. Edmond Desmoulins, who says that the education given to the English has peculiarly fitted them to be successful colonists. Whether this method of education was deliberately chosen, or whether it was stumbled into through the natural bent of the people, does not appear: but we can only hope that, either by accident or design, we may find as successful a method of teaching architecture; for every English-speaking man in the world must wish that we could produce buildings that would vie with those produced in the most brilliant epochs of Greece and Rome, of France and Italy, and with the best Saracen buildings, and with the Gothic ones that pervaded Europe during the Middle Ages. We cannot hope, however, to equal the excellence of monuments that sprang into existence after stirring times, in nations where there was an adoration of the beautiful, particularly when one of these nations is believed by some philosophers to have possessed faculties as superior to those of the nations of Europe as the faculties of European nations are superior to those of the negro.

Architecture is the poetry of construction, and the noblest poetry is naturally found in buildings that are applied to the highest transcendental uses. A certain amount of comeliness is necessary to every building, except such buildings as are required to create fear, horror, or a sense of ignominy, such as castles, gaols, gallows, and pillories.

A building is an organism created by man for his own needs, which should emulate the organisms of nature. To take man as the highest organism, we may say that the man of the most striking appearance is not a perfect organism if he has some incurable internal defect; and so in a building no beauty will wholly compensate for its want of answering the purpose for which it was built; and even if it answer the purpose, and has a beauty that is quite incongruous with its use, it becomes as ridiculous in the eyes of judges as a man in a State dress acting as a scavenger. In some of the modern buildings that at first sight affect us strongly, from their size, mass, or ornamentation, if we see that this size and this massiveness are not necessary, that these embellishments are not consistent with the uses of the building, we merely despise the factitious effects.

As our knowledge of the strength of materials, of the strains and stresses that result from the different forms of building, becomes more accurate, it will naturally affect the shapes of the different parts of the building, and I think we must look very much to this for future advancement in architecture.

We want to mark those portions of buildings that have special duties to perform with that architectural emphasis which is given by mouldings, and these mouldings have to produce the effect we want in our own climate. To use mouldings that were designed for climates different from our own, and consequently do not properly answer their purpose, is really to declare ourselves indolent or incompetent. We have plenty of plausible excuses, *i.e.*, that the Romans used the same mouldings whenever they built, and that their Renaissance imitators did the same, and that the archæologists, our masters, would be shocked at any architect who attempted to think; but neither excuses nor bad examples will avail us, if our sole object is to advance our art. We have, too, to consider the purposes to which our buildings are to be put, the ratio of strength we must allow when a building is merely for a temporary purpose, or to last as a record for future ages.

According to the uses which the building is to subserve we must consider the ornaments that are to be given to it by the sculptor, and whether their forms are to be taken from vegetable life only, or are to include animals or man. Where buildings are to be used for the highest intellectual or moral ends it is perhaps difficult to find even figure sculpture that will sufficiently express their high use. In classic and mediæval times at least, sculptors employed for this purpose mythical or symbolic figures. In the present day we have almost given up all symbolic and emblematic forms, and have trusted purely to words, which do not strike the multitude and have not, in the bare form in which they are mostly given, the same effect on the mind as symbolic forms. Sculpture is wanted on all buildings, but its use should be imperatively called for by the people for all public buildings, for the sculpture, if properly designed, would more completely show the use of the building, and surely the public who pays for these buildings should be informed of their use; and this is particularly called for when the buildings are for benevolent purposes, such as hospitals, asylums, workhouses, rests, refuges, and homes. The speaking arts of sculpture and painting are particularly wanted for enlightening the people on the advantages of living in a free and advancing country. It is for statesmen to consider how much more contented the population of this country would be if the fine arts were used to proclaim the advantages the people enjoyed.

The subject of colour is one that has of late years fallen greatly into disuse, but, as far as I can comprehend, very unnecessarily; for as Nature colours all her works, and produces every sort of emotion from the combination of form, light and shade, and colour, it can hardly be inappropriate for man to do the same; and all architects know that monumental colouring may be as well marked as monumental form.

Hitherto the proportions used, or, as the ancients more properly called them, symmetry, which forms so important an element in architecture, has been almost confined to those taken from the highest transcendental buildings of the past; but we see in Nature every conceivable proportion, and most of these are good; consequently it is only from want of observation and want of skill that we confine ourselves to the proportions of Greek, Roman, or mediæval work; for Egyptian, Assyrian, Arabic, or Indian architecture has found no great favour in Europe.

The thing we want most is the advancement of architecture. But who is to show us the way? A deceased architect of marked ability said we must wait for another irruption of barbarians, and probably if they were barbarians of improvable quality they might solve the problem; but it would be a drastic measure that most of us at least would pray might not occur in our time. I think the greatest obstacle to the advancement of architecture is the fact that the bulk of Englishmen do not care about it in the least, and, as far as I can judge, the fine arts are not likely to improve if no one cares for them. So every architect should be ready to point out what architecture does for a nation, and so help to create the want.

Architecture—and by that I mean good architecture—must even from the size and importance of its monuments create some sort of emotion in the beholder; and the least reflection will show him the vast army of various men that have been employed to get all those materials, and to bring them together, the thousands of craftsmen wanted to fashion them and put them in their places; and according to the stateliness, the impressiveness, or the beauty of these buildings will the power, wealth, and grandeur of the nation that has erected them be brought before his mind. If these buildings are for the highest purposes and clearly express their character, deep emotion will be excited in him, and he will also think of the science that these buildings presuppose, the artistic skill of the architect and artists employed, and of the artistic tastes of the nation at the time in which they were built. As the late Charles Garnier said, "Architecture is an obtrusive art." Its masterpieces thrust themselves upon you and cannot be hid in a corner, and as long as they remain they call from the people who wish to see them a journey to the land of their creation; so if we want a good account of our time to be given to posterity, we must pick out good architects, encourage them to do their best in erecting important, well built, and æsthetic structures; at any rate, if this is neglected the age in which we live will be lampooned.

The painters and sculptors laugh at us when we say we want the public to show us what they like and what they want, and say, "We struck out a new type of woman never before painted, and new methods of treatment, and the public appreciated it and asked for more;" but their case is quite different from ours. It is not pleasant, I confess, for a painter to paint a picture or a sculptor to model a statue that does not sell, but an architect cannot put up a monumental building in the hopes that the public will approve of it and pay the expense. The most he can do is to show a drawing or a model in public, and persuade men in power, or of immense wealth, that he is both capable and original, and will be able to charm the public by his work. How did the architect of the Erectheum persuade the State to employ him? So small a monument as that of Lysikrates could well have been shown by a model.

To get the proper teaching is not so easy as to say we want it; but I think in architectural education, as in general education, we must endeavour not to teach that which is dead nor that which is useless, but confine ourselves to the necessary and the useful. I think it is obvious that architecture is the poetry of construction, and consequently the very first thing to be taught is construction, and it is not the mere rough knowledge of the main principles, but that exact and accurate knowledge which was possessed by the late Romanesque architects of the properties of stone. They got this knowledge mostly by the failure of their buildings, but they reasoned on the causes of the failure—they observed, they thought, and they dared; while we have most accurate means of testing the strength of every material that falls to our hand, and if we be mathematicians we can solve every stress and strain, as the engineers have done. We have many new materials that our predecessors had not, and some of extraordinary strength and of a capacity for taking nearly every form with ease; I speak here particularly of cast iron. This is not without dangerous qualities when exposed to fire, but we ought not on that account to neglect it. With wrought iron we have other difficulties to contend with besides the danger of fire, for it is very difficult, and still more expensive, to make this in any agreeable or beautiful shape and to ornament it; but we cannot believe that the mediæval architects would not have largely used both materials if they had possessed them. We have, too, practically a new material in concrete, but this material also is not without its difficulties and its drawbacks, and we have besides the whole of what I may call old-world materials to our hand to deal with structurally in a more perfect way than they could ever have been dealt with before, and the whole category of old shapes to use, and new forms to adopt that have never been used before. If the dictum of Sir Joshua Reynolds be true, that by becoming familiar with the invention of others we learn to invent, the great knowledge that we possess of past architecture should make us more ready to invent; but, in fact, the gift of invention, so far as architectural forms are concerned, seems almost extinct. We have only this to say in excuse, that from the fifteenth century to the middle of the last century, European architects had nothing but Roman architecture, or its Renaissance imitation, to study and use; since then we have had Greek and Gothic. Neither of these styles, however, was used to stimulate invention, but merely to copy, and even in the present day it is doubtful whether the invention

of a new form, unless it were surpassingly beautiful, would be tolerated, for antiquarianism has usurped the place of architecture.

We must of course study the expressive and beautiful buildings of the past to learn how their effects were produced; but, having learnt that, our object should be to invent other proportions and other shapes, whose effects shall be equal or superior to those of the past, and when I speak of invention it is merely the adaptation of some of the innumerable forms of Nature. In the present day we should say that there was even less invention amongst architects than there was amongst the Romans, for the Romans at least started a new method of adornment when they carved the shafts of their columns or covered their pilasters with running foliage; but of course it is to the Gothic architects that we must look for those rapid adaptations that we now call inventions. Gothic architecture from the time that it emerged from Romanesque passed rapidly through what we call Geometrical and Decorated, till it fell into the mechanical stiffness of Perpendicular. Were these men blessed with greater powers of invention or adaptation than we are? or is it that the gift has become atrophied for want of use? At any rate, the substitution of archæology for architecture must tend to this result, for if the wing of the apteryx dwindled to the size of your thumb-nail for want of use, it is probable that our powers of invention will do the same. I think that we are not so destitute of invention as we appear to be, for in out-of-the-way places in the country you see the elements of new Gothic and new Classic, where the architects have not been very learned, and have not had the fear of the archæologist before their eyes.

When one speaks of invention, good invention is meant, and if we have the gift of invention it is only by the constant exercise of it, and by comparing our inventions with the excellence of the past, that we are likely to progress. I feel sure that the architecture of one century, or perhaps even of one quarter of a century, should not exactly resemble that which went before it, for besides our proclivities and aspirations not being exactly those of our fathers' time, if our knowledge and invention were progressive we should want the one for use and the other for emulation. In poetry we do not want the poets of our own time to portray again the character of times long past, for in that we can take but small interest; but to portray our advancing knowledge and the good, striking, and dramatic characteristics of our own time, as Tennyson so transcendently did; and we must never forget the labour and study he undertook to perfect himself, for he learnt Hebrew to see how the Hebrew poets arrived at sublimity. I do not speak about ornament, whether carved or painted, for that is the business of the sculptor or the painter. I by no means wish to discourage architects from being painters, sculptors, and ornamentalists, so long as they are good architects as well; but it is absurd to give up the advancement of our own art for the sake of being dabblers in the arts of others. I have said nothing about the art of planning, although that is a most important art, and in these days, where convenience is thought of more importance than anything else, it is the art by which most competitions are gained. No one can deny that it is a useful art, and may be a very impressive one, and I am sorry to say that in its highest form it is not sufficiently studied.

I must say something on the results of our own examinations, for they have had a very stimulating effect on the students. The examinations let them know some of the things they ought to study, and give them an object to aim at. Examinations, however, have certain shortcomings like everything human; they test insufficiently. Besides, a parasitic growth clings to them; they lend themselves to cramming, whilst to cram is the last thing we should wish any architectural student to do, for it is a pure effort of memory to recollect what has been before written or said and repeat it at a given time, while the great object of instruction is to teach people to think and act properly. The sort of memory architects want is for the thing to be remembered to be firmly and permanently fixed; while anything crammed, when it has once answered its purpose, is almost immediately forgotten, and leaves scarcely a trace behind. Architecture in every one of its three branches requires accurate thinking to the end in view, and no cramming is of the slightest use in that direction. The only use I ever heard claimed for it is that it enables a man to seem to know what he does not know, which may be useful on occasions.

The plan or arrangement of a building requires to be made perfectly suitable for its purpose, and in the cases when the building is not for common use it should have a certain effect, and if for high purposes the forms require to evoke feelings of dignity, stateliness, sublimity, or awe. I cannot refer to more perfect examples than the Parthenon and the inside of the Pantheon. Plans embody not only the general conception of the building and its supports, but should roughly inform a skilled person of the whole scheme of the completed building. We judge of the constructional skill of the architect by the smallness of the ratio of supports to the total enclosed area.

Every one of the three branches of architecture is not only sufficiently difficult, but may be considered transcendental, *e.g.*, when we look through many plans we see that some are not only more convenient and more striking than others, but sometimes it seems as if the great planner were first and the rest nowhere. As buildings are meant to stand, it has always struck me as rather a paltry trick to arrest attention to make a building look unsafe, or to put in a piece of construction which forces us to ask how the architect has managed to make it stand. We want everything to look stable, so that our whole attention may be given to the æsthetic effect; but at the same time skill in construction will enable us to give great variety in the different parts of the building, some parts being slight or slender as compared with the important members of support, which must necessarily be bulky. No building should be put up that has not some evidence of the intention to make it comely, unless it be those buildings that are intended to convey horror or antipathy, of which I spoke before. Every building wants character, and that character should show its use; and when buildings are for the purposes of dignity, reverence, or awe, it is most important that their proportions should excite these feelings, and that any sculpture or painting that is put on them should heighten their effect in the same direction. Although it may seem a paradox to say so, the special convenience that should attach to every building is not so important in the highest sort of monuments, as for the monument to excite a feeling of sublimity, and for this reason, that high thought clothed with beauty is much more lasting than ordinary wants. If we could call to life the High Priest of the Parthenon, he might tell us that Iktinus and Kalikrates made the Temple very inconvenient for the service, but for more than fifteen hundred years that service has been abolished, and we are still enamoured of the sublimity of the Temple.

The principal things that want teaching when construction and the art of planning have been mastered are the proportions that have raised the various emotions in existing buildings, the art of moulding, and the exercise of the inventive faculties, for it is doubtful if invention is denied to any average human being, although some have it in such profusion that it is easy to them to invent, and you probably recollect Plato's saying that those entrusted with public duties should find them easy. As I have so often said before, the construction should be the best that is known and practised, and any construction that is used merely because it is old is mere pedantry.

In every new building we arrange, difficulties arise in giving the necessary parts that æsthetic expression that we wish them to have. It is comparatively easy to mask the construction so that we may use the æsthetic solutions of deceased architecture, and so long as we pursue this course, architecture can never advance. What should be done is to encourage the student to solve the difficulty in his own way, and that is why ironwork is so serviceable, because in that the student has nothing to copy from, and he must use his inventive powers. Very long columns and stanchions, for instance, have junctions that must be kept together by ugly lugs and bolts or some other cumbrous addition, and these have to be made graceful or beautified. There are difficulties about moulding in iron, and in trying to solve these difficult problems the student should be recommended to aim at simplicity and elegance. If after many trials he cannot do anything towards a solution of these problems, he should abandon architecture.

As regards the practice of some of the younger members, there is too much straining after effect; too much recourse to easy means of arresting attention, such as by rustication; too much partiality for curious and incongruous forms; the sewer-arch or water-opening is too much adopted for entrance doorways and attic windows—anything for a novelty! corners of square openings are rounded off, and projecting members are slightly curved or bellied out. Now there is, in my opinion, nothing like straight lines for dignity, and the rounded corners and bellied door and window heads mostly produce meanness. Another device is to make columns like those barrels that are used to fill in the odd spaces in ships, where the middle diameter is nearly double that at the base and necking, a gross and vulgar caricature of the entasis of the Greek columns. This device truly arrests attention, but only to make the judicious observer note the absence of any feeling but for vulgarity. Architecture is a very difficult fine art, and these attempts to attract attention easily merely show want of proper training and laudable ambition. Horace's maxim is as true now as it was then, that "you should study Greek examples by day and by night." The simplicity, grace, and restraint of Greek work cannot be too much studied, and that profusion of ornament that is now so common is not only opposed to Greek practice, but to good taste, for, as it has been truly observed, nothing great is obtained without simplicity.

There is one feature we want badly, and that is a well-designed large window, for there is great demand for these in the new public buildings, and we have nothing but the huge Roman semicircular window of the Baths, and the west end Perpendicular windows, which have little claim to beauty.

There is a great want of study of lighting; half the effect of large complex interiors is got by concentrated light against "a mighty contiguity of shade," while most of our buildings are spotted all over with windows. One of the architectural devices the student should study is to get harmonious grouping of immense windows with those of ordinary and small size, and another is how to treat the problem of the seventeen-story building; for though we have not yet adopted this American device, the increasing scarcity of ground and price of land in large cities tend to produce it.

The only use of these addresses is to correct mistakes in teaching; to point out, if one can, where the defects in our practice lie, and to stimulate each other to greater exertion, and, if possible, to find out the way to the advance of our art. The chief things that act as incentives to mankind are the hope of wealth, the hope of honours, and the hope of immortality; and I certainly think that we might well increase one incentive by insisting on being paid for our work, for we are not paid now. I think the powers that be might well make another incentive more common by bestowing honours on the profession, which is now hardly recognised, although it does so much to raise the reputation of the nation by designing monuments which persons from all parts come to see. I can only hope that the prospects of immortality may induce those with congenial genius and the highest ambition to devote themselves to architecture, and to spare no thought and no labour in perfecting their work, so that it may vie with the best Greek work in grace, and with the Mediæval in impressiveness. We all wish that a great architectural genius may arise, for the sake of our art and of our country; and it is good for every one but the genius, for his highest traits are mostly brought out by misery. As Shelley says, "We learn in suffering what we teach in song."

I think, or at least hope, that with all the present teaching, striving, and devotion, we shall find the true path of progress, and that in the near future architecture may realise the transformation of the dragon-fly:—

> "To-day I saw the dragon-fly
> Come from the wells where he did lie.
>
> An inner impulse rent the veil
> Of his old husk; from head to tail
> Came out clear plates of sapphire mail.
>
> He dried his wings: like gauze they grew:
> Through crofts and pastures, wet with dew,
> A living flash of light he flew."

Colonel Prendergast said he had been requested to move a vote of thanks to the President for his suggestive and interesting address. His first duty was to congratulate the President upon the honours which were showered upon him last year. He had not only gained the Blue Ribbon of the Royal

Academy, but what to them was a more striking circumstance—he had again been elected to the Presidential chair of the Royal Institute. But like many great positions, these were not without their drawbacks. He had often thought that on occasions of this kind it would be very desirable if they could carry out their old national trait and, perhaps, take sides and have a debate on the address, Could they not have a debate on the President's address? There was no doubt that the suggestiveness of what the address contained would afford ample field for such on debate. He (the speaker) had the profoundest admiration for the system which had been introduced in Paris into the profession to which they belonged. People were always talking about originality. He would like to know what originality was worth unless they knew the science and grammar of their profession. It was those who were doing the greatest mischief who were telling the young men—who, after all, were like young men and would like to shirk the difficulties of life—that they could at once start a style of their own and ignore those who had gone before and had made architecture what it was. The public wanted to be educated upon this subject, but he did not see how it could be done if architects were not educated themselves. Architecture *nasciter non fit;* and he was perfectly convinced that he was the greatest enemy of the young men rising among them who told them that they should start life with something different to what they had done. In France, too, there was the clique who had started this hare of originality, Only within the past few days there was in that well known French publication, *L'Illustration,* evidence that the most refined and the most artistic of European peoples had got this cancer growing amongst them. Anything more ludicrous, anything more detestable, it was impossible to conceive than the results shown by the pictures. The writer also charged full tilt at the architects, saying they were tied and bound to their worn-out doctrines, while the new school were the valiant pioneers of the ideal, who pushed forth manfully and who produced work which proved more eloquently than words what the future had in store. The President had called their attention to the use of iron construction. This was, indeed, a field for discussion. He happened in his daily walks to pass through St. James's-square where for eighteen months or two years a large building had been erecting. It was an object lesson to follow that building. It was fiction founded on fact. He asked the meeting to record a vote of thanks to the President for his very suggestive address.

Professor Roger Smith said he rose with pleasure to second the motion. It seemed to him that the phrase which more than once occurred in the address—the advancement of architecture—might well be the text of it, as it had been the text of more than one address he had heard at the Royal Academy. The President's desire had been to put before them several ways in which advancement could be made. There could be no question that novelty had a sort of fascination, especially if the new thing be good, not to say better than that which went before. He did not believe in the present day in the possibility of new styles being invented, except at the suggestion of new materials and new wants that might arise. These might modify their mode of building to a greater extent than they could foresee at present. But it was impossible for them to forget the forms which had been the outcome of all the years of civilisation, and which had covered Europe. It was impossible for them, too, to build without remembering that it was out of the question that the public should admire buildings without thinking of the forms which had been wrought out with the utmost care and skill during the different periods; and he believed that for some time to come originality must mean, not new features, but some new modification of existing features and certainly new combinations. About new proportions which the President had suggested, he (the speaker) felt a little misgiving. New combinations were possible in almost endless variety, and the words in which the President opened—pointing, as they did, to the transformation which was being made in London and to interesting buildings to be found in different parts of the country where architects were freer from the fear of critics—showed that some such a change was taking place. The large number of illustrations which appeared week by week in the technical journals showed, too, what large sums were being expended and what progress was being made. They had only to compare the contents of one of these journals of to-day with that of, say, twenty or twenty-five years ago, to see what great advance had been made. This advance they must recognise, and he felt full of hope that in future it was going on. If the examinations and the Institute assisted in inducing men thoroughly and substantially to train themselves, that advance might be accelerated and might be a healthy one.

The vote of thanks was carried, and the proceedings shortly afterwards concluded with the announcement that the next meeting will be held on the 21st inst., when Mr. F. Bond will read a paper entitled, "The Comparative Value of Documentary and Architectural Evidence of English Cathedrals."

SINGAPORE TOWN HALL AND THEATRE COMPETITION.

In the middle of 1897 a committee was appointed to collect money for a permanent memorial in commemoration of the Queen's Diamond Jubilee, and to decide upon the form such memorial should take. About $420,000 was raised, and with this it was decided to build a new Town Hall and Theatre. A difficulty then arose in selecting a site. Singapore land, in the town and for a distance of 1½ miles outside the town is, generally speaking, bad for building upon, inasmuch as it is swampy, and in many instances solid ground is not reached at less than from 60 to 80 ft. This is, of course, a serious matter even with an ordinary building, as so much money has to be spenf in piling and in cement work, a very expensive item where all cement is imported, but in the case of a building such as was proposed to be erected it is even more so, as in some parts very great loads would have to be carried.

The committee after inspecting various sites finally decided upon the worst, and, without taking any professional advice as to the suitability of the site, called for designs for the new building, the advertisement appearing in the local papers—Colombo, India, Hong Kong, Shanghai, and Java, as well as the home papers, a premium of 200*l.* being offered for the first, and 100*l.* for the second premiated design, but with no guarantee that the successful architect would be appointed to carry out the work. When architects applied for particulars there were none to be had except the plan of the site (there were no levels given), the proposed amount to be spent, and some misleading data to calculate the cost of the building upon. Later on the Municipal Engineer made a few tests of the ground, and then with a few photographs of the surrounding buildings (none of which were worth the cost of photographing) these were sent to the competitors, but still no particulars as to the accommodation required; these followed about two months later, with a notice that the time for sending in had been extended one month.

On August 31, this year, eighteen sets of plans were received, one from Singapore, one from Hong Kong, Colombo, and Java, two each from India and Australia, the rest from England and Scotland. In August the committee made their award, Messrs. Franken & Sills, of London, being placed first; Mr. Tunstall, of Colombo, second; and Messrs. Swan & Maclaren, of Singapore, third. The drawings were last month publicly exhibited for a few days.

Messrs. Franken & Sills' design, which was placed first, had a fairly good workable plan, but it had one very weak point. The two buildings had been planned to be built one on each side of the principal entrance hall, the stage of the theatre adjoining the hall, thus placing the most dangerous part of the building, as far as fire is concerned, right in the centre of a large block of buildings; besides which, there would be a difficulty in getting in scenery; in fact, one could not see that any provision had been made for it. In other respects the theatre plan was very good. The style of work adopted was Indian, the proposed material being granite and red brick, with tile roof. The design was illustrated by a set of very highly-coloured elevations and a water-colour perspective; the colouring, however, did not g ree with the materials specified. The roof shown, too, was one which could never be used here, as it was so much cut up with dormers, minarets, small domes, &c., and could never be made water-tight in this land of tropical storms.

Mr. Tunstall's design, which was placed second, was somewhat similar to the last in plan, but lacking the good points. The design, which was illustrated by a poorly-drawn set of plans and elevations, was for a stucco building of severe Roman style.

Messrs. Swan & Maclaren sent in two designs, their plan being entirely different to the others, inasmuch as they had kept the two buildings separate—at least, they were only connected by an arcade. Their Scheme A, which was on the lines laid down by the Committee, was a two-storied one, while Scheme B was for a one-storied building, a design the authors considered more suitable for the site on account of its lightness. In this case the theatre was placed at the back, the main entrance of the hall doing service for the theatre also. In the other scheme the theatre was quite isolated except for the slight connexion before referred to. The plan of the theatre was an excellent one, well adapted to the requirements of the place.

"Butterfly" (Australia) sent in a very fine design, illustrated by a very good set of drawings. The design was far away the best submitted, but the plan was not so good as that of the first and third designs, and more extravagant; but with very slight modification it could have been made a very good one. The author explained that he was handicapped by not receiving the particulars as to accommodation until after his plans were completed.

Mr. J. A. Barr (Sydney) also sent in a most artistic design in a set of beautifully-executed drawings. The plan was simple, but a good one as far as the Town Hall was concerned, though the theatre was rather weak.

The remainder of the designs were very poor, with, perhaps, one exception, that of Messrs. Laville & Sevenoaks (India), which was commended by the Committee. The Committee, which consisted of three lawyers, two Civil servants, a banker, and an engineer, did their work fairly well considering that they had no professional advice.

Nothing has so far been decided with regard to the building. X.

ENGINEERING SOCIETIES.

Society of Engineers.—At the meeting of this Society on the 7th inst., Mr. W. Worby Beaumont, President, in the chair, a paper was read by Mr. Perry F. Nursey on "The Preparation of Rhea Fibre for Textile Purposes." After referring to the amount of time, trouble, and money that had been expended in developing the practical application of rhea fibre, which was the longest and strongest in nature for textile purposes, the author observed that the history of the endeavours to utilise its fibre extended back to the beginning of the present century. It was introduced into Calcutta in 1803, and was brought to England in 1814 by Capt. J. Cotton, to whom the Society of Arts awarded a gold medal. The paper went on to describe the various processes which had been successively employed, concluding with the observation that the preparation of rhea fibre for the spinner had advanced somewhat, albeit very slowly, and he expressed the opinion that the solution of the problem would be found in a combination of mechanical and chemical processes, chemistry stepping in as the handmaid of mechanics.

Presentation to a Cheshire Surveyor.—A presentation has just taken place in Chester to Mr. William Holland, late surveyor to the No. 1 district of the Cheshire County Council, from the foreman and workmen of his district. The presentation consisted of a black marble clock. On a gilt plate on the clock was engraved the following inscription: "Presented to Mr. William Holland, District Surveyor of the No. 1 District (Cheshire County Council) on his promotion, by the foremen and workmen of his district, as a mark of respect and esteem. October 29, 1898."

Church-row, Hampstead.—Despite the protests that were raised by many residents in the locality, as well as by writers in the Press, the old houses Nos. 2, 3, and 4, on the north side of Church-row, have been demolished for the building of a block of five-story residential flats, to abut in the rear upon the lane turning out of Heath-street. The architect is Mr. G. Sherrin.

Design for Stained Glass: "St. Cecilia." By Mr. Edward J. Procter.

"ST. CECILIA": DESIGN FOR STAINED GLASS.

THIS design, which was exhibited at the last Royal Academy, is by Mr. Edward J. Procter, and is intended to fill a panel in one of the folding doors leading to a music-room.

MAGAZINES AND REVIEWS.

THE *Quarterly Review* contains a well-writen article on Burne-Jones, in which, however, as in almost all the critical notices of him which have appeared since his decease, we find the same one-sided enthusiasm for the great qualities of Burne-Jones's art, with apparently an entire blindness to his weaknesses—the restricted nature of his powers; the mannerism of his figures, in which all personages, ancient or modern, allegorical or real, male or female, had the same physiognomy and the same expression; and the often rather puerile character of his intellectual conception of a subject. Lofty aims, consistency of style, and splendid colour, count indeed for much, but they cannot make us blind to such shortcomings as these; and so far from thinking, with the reviewer, that Burne Jones s fame will grow and the value of his work increase in the coming years, we are persuaded that the present enthusiasm for his works will before long undergo some revision. In the article on "The Setting of a Greek Play," which is only very partially concerned with the architectural setting, Dr. Dorpfeld's "heresy," as we call it, of the absence of a stage and the mingling of the principal actors with the chorus, is dismissed as perfectly untenable and resting on no constructional evidence; though a suggestion is made, and we think a not improbable one, that in the fifth (B.C.) century the stage was of less height than it afterwards became, so that an occasional closer relation between the chorus and the principal actors is thus more easy to imagine than with the later more lofty stage. The *Quarterly* also includes an article on "Wireless Telegraphy." The writer would prefer to call it "Etheric Telegraphy," and would apparently include under it signalling by rays of light. A fairly accurate and popular description of this system of telegraphy is given, but its drawbacks are barely touched on, and no mention is made of the recent improvements introduced by Dr. Lodge and described to the Physical Society this year. Too much credit is given to Signor Marconi. However much "his youth, his nationality, and the unworthy attempts made to belittle his success" may attract "the attention of the Press," these claims cannot be taken into consideration when apportioning due credit to the various pioneers of wireless telegraphy. Dr. Lodge exhibited to the British Association in 1894 a system of telegraphy substantially the same as that claimed two years later by Marconi in his patent. A well-known expert has stated that this patent cannot even be described as "a novel combination of old instrumentalities." We would submit that this is a more probable explanation of the check to Signor Marconi's progress than "certain financial considerations which the Limited Liability Act has done so much to create in this country."

The *Gazette des Beaux-Arts* contains an article by M. Eugène Müntz, on "Les Dernieres Années de Léonard de Vinci," referring mainly to his rather unfortunate career as a military engineer, and with illustrations (most of them pretty well known) of his fantastic and impracticable designs for new engines of war, which M. Müntz rightly characterises as "inanité." M. Gustave Frizzoni contributes an article on the recent exhibition of pictures of the Lombard school in London. There is also a short article by M. Roger Marx, on the etchings and lithographs of Paris by Eugène Béjot, accompanied by an illustration of a charming little upright etching of a Paris scene, taken from near the Pont Neuf, with the Sainte Chapelle in the distance.

The *Art Journal* leads off with an article on Rodin the sculptor, who is just at present thrust upon us everywhere, though we are glad to say there is nothing more here about that absurd Balzac block. Rodin is an original genius who is going the wrong way, and whose injudicious friends arelencouraging him in it. When he did the "Age d'Airain" he was a great sculptor; he is now losing himself in eccentricity. What does the writer mean by saying that this work has "never been repro-

duced in England?" It was exhibited at the Academy a good many years ago, standing on the left hand of the entrance door to the octagon hall; and we are pretty certain it was also illustrated. "Maternité," an illustration of which heads the article, is also a really fine work. Among the other articles is one by Mr. Ashbee on his own designs for "table service," one on that rather over-rated artist Robert Scott Lauder, and one by Mr. Fred. Miller on Gesso work.

The Christmas number of the *Art Journal* is devoted to the life and works of Lady Butler, who well deserves this honour. The letter-press is by Mr. Wilfrid Meynell, who says truly that this artist has done for the English soldier in art what Mr. Kipling has done for him in literature. The illustrations include, besides some of the well-known works, a good many interesting sketches and studies.

In the *Magazine of Art* Mr. Spielmann has taken up the subject of "Coincidences and Resemblances in Works of Art," of which some illustrations are given. The "Money-changers" of Marinus van Romerswale is an obviously intentional imitation of Matsys' "Misers," to our thinking; on the other hand, the similarity of attitude in Reynolds's "Mrs. Lloyd" and Fragonard's "Chiffre d'Amour" is probably a pure accident, and the resemblance is not so very close either, only that both figures are writing on a tree. An article on "A New Symbolist" introduces us to some of the works of Sascha Schneider, a kind of German Blake, whose designs are striking and original, but do not constitute a very healthy form of art. We have more pleasure in welcoming a new artistic humourist in the person of M. Ronner, son of Mme. Ronner of cat fame; his four silhouette subjects, "An Address of Congratulation," are delightful. M. Ronner has started a new method of treating silhouette, in very close cross-hatching instead of solid black; this enables him to slightly modify the tone for a background figure, without departing from the pure silhouette treatment in each separate figure. "The Quaint and Grotesque in Cotton Designing," by Mr. Dolman, treats a new subject, and contains some interesting and novel designs.

The most important article in the *Architectural Record* (New York, quarterly), and a very important one, is that by Mr. J. Beverley Robinson, on "Principles of Architectural Composition," illustrated by a number of sketches and views of actual buildings. This is an attempt to find out and illustrate the influences which govern the relation of parts to the whole in the masses of a building. Whether we should agree with all the writer's views is one question, but we recommend the article to the attention of architectural students, as a thoughtful and original study. Mr. Ferree continues his articles on "French Cathedrals" (we presume these will ultimately appear in a permanent form), and Professor Goodyear, in an article on "Unknown Italy," we are glad to find quitting his untenable theories on the distortion of buildings to do his readers a real service by describing and illustrating buildings in Italy which are out of the beaten track of architectural illustration, and well deserve attention.

The *Artist* includes among its contents an illustrated article on the Bayeux tapestry; illustrations of repoussé work by Mr. Edgar Simpson, and a paper on Furniture Design read by Mr. Edwin Foley before the "Society of Designers," a body of which we have not before heard.

The *Engineering Magazine* includes articles on "The Great Railway Stations of England," considered in regard to plan and construction, by Mr. Cargill; the latest improvements in the French lighthouse system, by Mr. Jacques Boyer, and "Sanitary Principles in the Construction of Isolation Hospitals," by Mr. G. A. T. Middleton.

The *Studio* (October 15) devotes a long illustrated article to Burne-Jones's "Cupid and Psyche" frieze at No. 1 Palace Green. "The Renaissance of the Medal in France" is illustrated by many examples, but the title is rather behind the day; if the medallist's art had died out in France, its "renaissance" at all events took place a good while ago. We only wish a similar renaissance would follow in England.

The only article in the *Century* of special interest to our readers is "The building up of a World's Fair in Paris" by Baron Pierre de Couburtin; a sketch of the progress of the Paris Exhibition. The sketch of "the Ferris wheel," with the Eiffel Tower looming behind it, suggests what may well be called "a queer landscape."

The American magazines are all full of their late war at present; *Scribner*, for example, merely touches on artistic topics in a few words on "Photography and the Stage" at the end of the number, an inquiry into the cause of the ugliness of many photographic representations of stage groups which are pleasing enough in the life. The simple explanation, we take it, is that photography sees too much and sees it too instantaneously, missing the transition from one phase of action to another. *Harper* is entirely apart from artistic subjects this month.

The *Antiquary*, among its "Notes of the Month," contains a sectional drawing of a curious underground chamber found at Penyfai, in Glamorganshire. The chamber is circular, constructed of unworked stones and plastered internally; 5 ft. high, 6 ft. 6 in. wide at the bottom, and 8 ft. 9 in. wide at the top, with an outlet through the roof, reached by two projecting stones or steps in the side. Various explanations are offered as to its original use; our contemporary is inclined to the opinion that it was an old charcoal oven. Can any of our readers offer a suggestion, or confirm this one?

The *Essex Review* (quarterly) contains an article on "Wanstead, its Manor and Palace" with an illustration of Tylney House, Wanstead.

We have received also the *Révué Générale*, the *Genealogical Magazine*, the *Gentleman's Magazine*, the *English Illustrated*, *Knowledge*, and *The Quarry*.

ARCHITECTURAL SOCIETIES.

Glasgow Architectural Association.—A paper by Mr. Austin Woodeson, Association Travelling Student, was read at the usual monthly meeting of this Association, held in the Rooms, 187, Pitt-street, on the 1st inst., Mr. George S. Hill, President, in the chair. Mr. Andrew Rolls, in Mr. Woodeson's absence, read the paper, which was a description of a sketching tour of a fortnight's duration made by him this summer in Berkshire and the surrounding counties. The paper was illustrated fully with about thirty-five drawings executed by himself during his stay. The drawings, which showed buildings in Reading, Bray, Mapledurham, Abingdon, &c., comprised illustrations of churches, almshouses, &c. Many of the buildings were further illustrated by large scale details and measured drawings. Mr. Woodeson referred to the southern counties of England as offering to the architectural student an excellent sketching ground. All types of building in styles ranging from Norman to Elizabethan were to be constantly met with.

Edinburgh Architectural Society.—The Edinburgh Architectural Society met on the 2nd inst., when Mr. John Kinross gave an address as hon. President of the Society. Mr. P. E. Nobbs presided. Mr. Kinross confined his remarks to the architecture of the city and suburbs of Edinburgh, and contrasted the munificence of men, such as Mr. Usher, Mr. Findlay, and Mr. M'Ewan in beautifying the city by the erection of handsome buildings, with that of the landowning and speculative classes, who were doing their utmost to destroy its amenity. He insisted on wide streets, with ample light, being necessary for the health of the community.

Liverpool Architectural Society.—"The Construction of Hospitals for Consumptives" was the subject of a paper read by Dr. J. W. Hayward before the members of the Liverpool Architectural Society, on the 7th inst., at the New Law Library, 41, Castle-street. Mr. W. E. Willink, President of the Society, was in the chair. Dr. Hayward said the site for hospitals for consumptives ought to be elevated, and, if possible, on the southern slope of a hill, so that it would face the mid-day sunshine; as far out of town as convenient, and with as much ground space as could be afforded. He dwelt with emphasis upon the importance of abundance of sunshine and fresh air, and strongly recommended the pavilion plan as the most desirable form a hospital should take, with both sides exposed to the sunshine. Speaking of the interior arrangements, he recommended a central corridor, with wards on both sides. As a precaution against infection, he urged the desirability of the interior walls being composed of glazed bricks, with no right angles, and as few corners or crevices as possible, or anything that might serve as lurking-places for dust or germs. In regard to ventilation, the air should be changed three times every hour, day and night, summer and winter. He recommended that fresh air should be taken into a warming, drying, and disinfecting chamber in the basement of the pavilion, through inlets in the walls on each side, and thence allowed to pass through gratings into the corridors above, and so into the wards either through the doors or special inlets. To abstract the foul air an outlet should be provided in each ward near the ceiling, conveying the bad air into a glazed earthenware pipe direct up the building, and out above the roof. With properly-proportioned outlets and inlets, the ventilation could be efficiently controlled.

Sydney Institute of Architects.—At a monthly meeting of the Sydney Institute of Architects on September 21, the President (Mr. J. B. Barlow) occupied the chair. A letter was directed to be sent to the hon. secretary, Royal Institute of British Architects, asking that examinations for the Associateship of the Royal Institute of British Architects might be conducted in New South Wales as well as in England. Professional practice and charges were discussed, and in the matter of reform in this direction it was left with the council to draw up proposals to be submitted to the next meeting. In the matter of the Fellowship of the Royal Institute of British Architects, the secretary was directed to have printed and circulated the letter lately received, which intimates that, according to the amended by-laws, any practising architects may, on the recommendation of the council of any allied society, be elected to the Fellowship by the council of the Royal Institute of British Architects without further ballot.

ARCHÆOLOGICAL SOCIETIES.

Royal Archæological Institute.—At the general meeting of this Institute on the 2nd inst., Judge Baylis, Vice-President, in the chair, Professor T. McKenny Hughes read a paper on "Amber," and in illustration of his remarks exhibited a collection of amber which he had made, chiefly in the Mediterranean and North Sea. He referred to some early notices of amber, described its composition and mode of occurrence, and pointed out that it could be made plastic or worked into new compounds which would pass for amber, suggesting in this way a possible explanation of some of the exceptionally large vessels said to have been made of amber, and some of the unexpected inclusions said to have been found in it. He then gave a short sketch of the history of its discovery, described the differences of colour, and discussed the distribution of the several varieties and the question whether the darker and especially the ruby colour was due to original difference of origin and composition or was a superinduced character due to the mode of preservation. If due to the various species of tree which yielded the resin, then it might depend upon climate and other geographical conditions, and thus be a more or less reliable indication of trade routes; but if it was due to difference in the mode of preservation, then the colour and the differences of composition which accompanied the colour could not be depended upon as evidence of the district in which it was produced. Among the specimens which he exhibited were some of dark ruby red, both from Sicily and from the North Sea; also from both districts specimens of honey and dark sherry-coloured amber. He explained that the proportion of ruby red to the yellow amber was very small in the North Sea and very large in Sicily, but pointed out that most of that found in Catania was carried down the river Simeto from beds on the flanks of Etna, whereas that found in the Baltic and North Sea was washed out of marine silt and had therefore been long subjected to very different conditions. He then adduced evidence to prove that the red colour was produced by the mode of preservation, exhibiting specimens in which the different colours were seen on one fragment; also beads from a Saxon grave, which were presumably from the northern area, in which the yellow had been more or less changed to a dark red; and a series of amber ornaments from an Etruscan tomb where all that were sufficiently well preserved to be examined were of a ruby red. He thought that there was a considerable original difference in the colour of amber, in some cases depending upon the varieties of tree and climate; that

there is commonly a change of colour due to the mode of preservation; but that colour and accompanying difference of composition can not be relied upon to determine the region from which isolated specimens have been derived.

British Archæological Association.—The first meeting of the session 1898-9 was held at the rooms in Sackville-street, Piccadilly, on Wednesday, the 2nd inst., Mr. C. H. Compton, Vice-President, in the chair. Many objects of mediæval religious art were exhibited by Mr. Andrew Oliver, consisting of several crucifixes and one processional cross with reliquary; also four paxes and an ivory figure of St. Michael and the Dragon, of Spanish workmanship; and a figure of Our Lord, with movable head of ivory—this also is Spanish of the sixteenth century; the hands and feet are lost; they were, doubtless, also of ivory. The most interesting exhibit was a hanging lamp of rough terra cotta, in the form of a fish, of early Christian date. Mr. Patrick, Hon. Secretary, reported the discovery, early last month, at Paul's Wharf, Upper Thames-street, of a portion of an ancient wall, 4 or 5 ft. in height, composed of massive random built Kentish ragstone, resting on a grille of squared timbers. The wall apparently had no squared face. It was found at a depth of 12 ft. or 13 ft. below the present ground line, in excavating for new buildings under the superintendence of Messrs. Stock, Page, & Stock, who thoughtfully communicated these particulars. The Rev. H. J. D. Ostley, Hon. Secretary, reported further discoveries at Dumbarton, where the *Crannog* was recently found, as described in the last September number of the Journal of the Association, from which it appears that the place where the canoe was unearthed was actually a rock; a curious ladder was here found, the rungs of which were cut out of the solid wood. All the relics have been placed in the museum at Glasgow. They appear to belong to the Neolithic age, no metal of any kind being discovered, the objects being of bone, stag horn, jet, chert, and cannel coal; some querns were also found. The first paper of the evening was by the Rev. Cæsar Caine, the subject being "Our Cities Sketched Five Hundred Years Ago," and was read by Mr. Astley in the absence of the author. The subject of the paper was a description of a most interesting fourteenth-century transcript by an unknown scribe of Geoffrey Monmouth's "History of the Britons," now in the British Museum, and numbered *Bib.* Reg. 13, A. iii. A characteristic feature of this manuscript is the addition to the text of many drawings of persons and places. The scribe would seem to have travelled much and to have been well acquainted with the places of importance on the road from London to Edinburgh, and has embellished the margins of the vellum pages with sketches of the chief buildings; thus we have the Tower of London, the Castle of Edinburgh, the walled border town of Carlisle, and York Minster, all delineated with some skill and clearly recognisable. The abbey churches of Bath, Gloucester, Winchester, with many others, and innumerable coats of arms and banners, added very great interest to this little old-world volume, which may have served the draughtsman as a guide-book or traveller's companion. The paper was illustrated with photographic representations of many of the pages of the manuscript. Mr. Patrick, Hon. Secretary, exhibited on behalf of Mr. J. T. Irvine some very carefully measured drawings of the beautiful seventeenth-century oak pulpit which, until recently, adorned the church of Yaxley, Hunts.

THE METROPOLITAN ASYLUMS BOARD.

At a meeting of the Metropolitan Asylums Board on Saturday last week, the Works Committee submitted the following draft clause for insertion in future contracts:—

"The contractor shall on all work executed for the managers pay the rates of wages and observe the hours of labour agreed upon by the Association of Employers and the representative trades of the workmen, but in the case of any trade where no such agreement exists then the rate of wages and the hours of labour must be those current in the district where the work is executed."

Mr. Street, who moved the original resolution, protested against the evasion of all reference to trades-unions in the recommendation, and urged that the Board had practically by the resolution arrived at pledged itself to the recognition of trades-union rate of wages. The word "representative" was misleading, and he moved to use the phrase "trades-unions" in its place.

This was seconded by Mr. Lile, but was lost, and the recommendations of the Committee were agreed to.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

The second meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 4th inst., Mr. H. J. Leaning, Chairman of the Section, in the chair. A debate on "Modern Architectural Tendencies as illustrated by Contemporary Work," was opened by Mr. C. H. Strange, Sen. Sec., who read some notes contributed by Mr. F. M. Elgood, who was unable to be present at the meeting as announced.

Mr. Elgood said he would confine himself to one tendency only, which seemed to him to have a distinct bearing upon the architecture of the present time, as it would, if persevered in, on that of the future. This tendency was the assimilation of styles, shown not only in domestic but in public and ecclesiastical buildings. How a style was to be picked up at the point it was dropped and further developed it was impossible to say, but it appeared to him that it could only be done gradually and apparently undesignedly. The author drew attention to the present day revival of the Queen Anne and the early Georgian, and to the increasing number of buildings of all sizes which were characterised by features derived from those periods. He thought it natural that architects should hark back to the time when architecture in England was on the progressive wane, and attempt to start afresh from the time when invention gave way to copyism; this seemed to be at the period soon after the Renaissance architecture of Europe became incorporated with English tendencies. We appeared to have done with Greek porticoes and Gothic street fronts, and to be making the buildings represent what they were. The architect most prominent in leading to the desired goal, he thought, was Mr. Norman Shaw. A notable feature in the revived style was the constant use of the horizontal cornice—often boldly crowning a building where the roof rose. With the use of this feature the broken skyline had to a great extent died away, the gables when used being made into steep pediments with the cornice running up them. Another feature was the employment of rusticications, in quoins, columns and in windows and door dressings—frequently to an exaggerated extent. He wondered whether any one would be bold enough to rusticate a cornice. A house built by Mr. Wade for Lord Windsor was a capital example of the modern tendency. In it were found forms and details of the Queen Anne and Georgian types, originally and effectively employed. The author thought that the possibilities of the style seemed infinite and adaptable to all methods of treatment and materials in large or small buildings. In the modern instances of the style there was little or no evidence of copyism, but a wonderful originality is apparent. Instances might be noted in the work of Mr. Norman Shaw at Queen's Gate, Scotland Yard, and at Liverpool, and also in that of Mr. R. T. Blomfield, and Mr. H. Ricardo. Perhaps a growing enthusiasm for and a striving after truth and simplicity, had a marked influence on modern tendencies. Another tendency was to be seen in the revival by the architects of the formal garden. The author asked if the apparent tendency towards uniformity of style was not a mere theory of his own but a real one. Who could say that it might not lead to the formulating of a truly English twentieth century progressive architecture?

Mr. Lanchester said they could hardly look forward to any prospect of forming an accurate view as to the future without taking some retrospective glances to obtain their bearings. Up to about sixty years ago, our architecture was running on lines, more or less parallel, with that of the Continent; then we broke away, leaving a few, such as the Cockerells, Pennethorne, and some of the best of the provincial men, to carry on the previous traditions, while others, such as Burges, Street, Devey, and Norman Shaw, struck off, with the object of securing a more distinct personal touch. They had many followers, but the leaders were far beyond the capacity of most, and while the first three were fortunate in leaving us before the great downfall, the last named was now expiating his sins by the adoption of a severe classicism. While one would feel it hard to lose the work of such men, one could well wish that their influence over their weaker brethren had been abated. No one would have dared, prior to the advent of their heroic individualism, to have inflicted upon us such blatant puerilities as those which composed the bulk of modern architectural work. Then the lesser minds took refuge in the unexciting and inoffensive commonplace conventionalities of the period; now they unhesitatingly put forth whatever form of foolishness happened to present itself first. On the Continent they had kept closely to the Classic tradition which, although it suffered from a tendency to sink the individual, more than compensated for doing so by the way its insistent demands on a thorough training in proportion welded together the whole body of its votaries, and made possible a definite and deliberate progression—which could only be compared to the gradual evolution of mediæval architecture. The irregular course which we had pursued had precluded us from working in the same manner; nor was it practicable for us to take up a foreign style, and base our work upon it. Our national sympathies would prevent such a course being satisfactory. The work of the foreign schools, which was practically all French, seemed to lack what we consider essential to a happy result, in that their designs were too self-contained—they did not suit them to their natural surroundings. We had a strong tendency towards simplicity and severity, and our utilitarian spirit kept a powerful check upon any inclination towards superfluous exuberance. Our weaknesses were due to an almost entire lack of technical skill in design, but he was inclined to think that we were awaking to a perception of our deficiencies in this respect, and to see that a severer mental training in architectural design was necessary before we could hope to produce work for lasting appreciation.

Mr. Jemmett said we should have a reason for all that we did. He thought that individualism or vanity was the leading principle of modern work, and that eccentricity was adopted for its own sake. Fashion appeared to rule architecture at present, and we were working on no definite single principle, though we had in England a tendency to treat materials in a logical manner. We were so thoroughly insular in character that we disregarded and were ignorant of what was being done abroad. To evolve a new style we must first become all of one trend of thought.

Mr. Hopkins thought that the last two speakers were Job's comforters; they said we had thrown over traditions, but would it not be more correct to say we had thrown over antiquarianism? He thought that the best of our modern work would be as much appreciated in two or three hundred years time as it was at present.

Mr. Strange said that the buildings now being erected were influencing the tendency of the times. A general tendency in life was that the knowledge of the *savant* and the scientific man was disseminated amongst the populace—the architectural tendencies were of a similar character—a great mind influenced the rest. We saw a general feeling for the fitness of things was running over the whole country, even on the part of the speculative builder. The tendency was in two directions—one was shown by the desire for ostentatious ornamentation and splendour, which was an outcome of the general prosperity, and one which we must appreciate as a desire for fine building. The other tendency was towards a simplicity of treatment. Simplicity was the last resource of complexity. Symmetry was a result of the desire for simplicity.

The debate was continued by Messrs. H. V. C. Smith, G. Lucas, Humphrey-Jones, and A. S. Tayler.

The Chairman summed up, and a vote of thanks to the openers of the debate—Messrs. Elgood, Jemmett, and Lanchester—was put to the meeting and carried unanimously. Those gentlemen then briefly replied, after which the meeting terminated.

Fenchurch-street.—Mr. T. E. Collcutt has prepared plans and designs for premises for Lloyd's Register of British and Foreign Shipping, with frontages in Fenchurch-street and the proposed new thoroughfare, Lloyd's-avenue, leading from that street to Crutched Friars.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday afternoon at the County Hall, Spring Gardens, Mr. McKinnon Wood, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Hampstead Vestry 10,490*l.* for electric lighting purposes, the Islington Vestry 6,780*l.* for similar purposes, the St. Martin's Vestry 5,000*l.* for sewerage works, and the St. Pancras Vestry 10,110*l.* for paving works.

Compounding Engines, Crossness Outfall.—The Main Drainage Committee recommended, and it was agreed, (*a*) That the estimate of 10,342*l.*, submitted by the Finance Committee in substitution for that for 8,450*l.*, adopted by the Council on July 26, 1898, be approved, and that the Council do sanction a further expenditure of 3,784*l.* in connexion with the compounding of the engines at the Crossness outfall; (*b*) That the tender of Mr. Benjamin Goodfellow, amounting to 20,684*l.*, for compounding the engines at the Crossness outfall be accepted.

The Works Department: Jobbing Work.—The same committee reported as follows, the recommendation being agreed to.

"We have to report that the cost of the following jobbing works, carried out under the direction of the Council by the Works Department, has largely exceeded the several amounts authorised by the Council, and that it becomes necessary for us to obtain the Council's sanction to the additional expenditure incurred :—

—	Work ordered.	Expenditure authorised.	Cost.	Schedule value.
		£	£ s. d.	£ s. d.
(*a*) Side-entrance in St. George's-circus, Southwark	12/10/97	85	121 9 9	89 8 10
(*b*) Side-entrance in South-end-road, Hampstead ..	12/10/97	75	166 8 2	101 0 11
(*c*) Repairs to Stamford Brook sewer near Willesden..	1/6/97	150	203 4 11	160 16 6
(*d*) Formation of shafts in Holloway-road ..	19/5/96	800	1,583 17 10	964 13 5

The manager of works has called our attention to the low prices allowed in the schedule in respect of excavation, timbering, and brickwork in sinking shafts, and he points out that the prices in the schedule are accepted as a whole, some being remunerative and others exceedingly low, but that taking the accumulated results of the whole of the engineer's jobbing works, a considerable saving is shown upon the schedule value. The statement is borne out by the fact that during the three years ended March 31 last the schedule value of all main drainage jobbing works amounted to 28,589*l.* 5s. 8d., while the actual cost was only 25,645*l.* 8s. 2d., showing a saving of 2,943*l.* 17s. 6d. After conferring with the manager and engineer, we are satisfied that the prices allowed for sinking shafts do not represent the actual value of the work executed, and that the excess of the cost over the schedule value does not show that the Council had been the loser to that extent, and it would appear to us that, if similar cases are not to occur in the future, the jobbing works schedule might with advantage be modified in this particular. It may be mentioned that the price allowed for excavation, viz., 10s. per cubic yard, is the same for all depths, and that though the sewer in Holloway-road, above referred to, is from 55 ft. to 90 ft. below the surface of the road, no extra allowance is made under the schedule by reason of the additional labour and expenditure involved. We recommend—That the Council do sanction the additional expenditure incurred in carrying out the following works:—(*a*) Side-entrance in St. George's-circus, 38*l.* 9s. 9d.; (*b*) Side entrance in South-end-road, 91*l.* 8s. 2d.; (*c*) Repairs to Stamford Brook sewer, 53*l.* 4s. 11d.; (*d*) Shafts in Holloway-road, 783*l.* 17s. 10d.

Slade Ravine, Plumstead Common.—On the recommendation of the Parks and Open Spaces Committee, the following was agreed to :—

"That the Council do offer no objection to the proposal of the Plumstead Vestry for the completion of a dam with penstock at the Slade Ravine on Plumstead Common, at the head of Roydene-road, conditionally upon the Vestry undertaking to carry out the whole of the work to the satisfaction of the chief engineer, and the chief officer of the Parks department; to the maintenance and management of the dam and penstock being undertaken entirely by the vestry, subject to the condition that the penstock shall only be drawn up very gradually, and on no account during rainfall, and also to such other conditions as the chief engineer may deem desirable; and, further, upon condition that the Plumstead Vestry give an undertaking, in terms to be approved by the solicitor, to pay to the Council, as owners of Plumstead Common, compensation for any damage which may be done to the common on account of the proposed works, and also to indemnify the Council against any claims for compensation whatsoever which may be made by owners or occupiers of adjoining property, or any other bodies or persons in respect of damage caused by or on account of the proposed works, or by the War Office in respect of interference with the rights of that Department."

Small Open Spaces and Churchyards.—It was also agreed to invite representatives of the Vestries and District Boards in London to meet the Parks and Open Spaces Committee in conference, with a view to determining upon some general scheme for the maintenance of the small open spaces in the country; and that the Local Authorities be invited to send one representative each to the conference.

Boadicea Statuary Group, Victoria Embankment.—The following report was submitted by the Highways Committee :—

"The Council on March 29 last, on the recommendation of the General Purposes Committee, approved as a site for the Boadicea statuary group by the late Mr. Thomas Thornycroft, which Mr. J. I. Thornycroft desired to present to the Council, the extreme end of the Victoria Embankment wall, by the corner of Westminster Bridge; and the Council on the same day authorised us to make the necessary alterations to the Embankment wall to enable the group to be placed in that position. We may point out that, by Section 60 of the Council's General Powers Act, 1898, the Council is authorised 'to erect and maintain, or contribute towards the provision, erection, and maintenance of works of art in London,' and under this authority the expenditure necessary for altering the wall can be incurred. Mr. T. G. Jackson, R.A., with whom the Architect has been in communication, has submitted a sketch, which we have approved, of a pedestal for the group. The height of the base of the group is shown upon this sketch as to be about 11 ft. 6 in. above the top of the embankment steps, *i.e.*, 5 ft. higher than the temporary platform upon which, in order that the general effect might be seen, a plaster model of the group was placed, and remained for some time. We have received a joint report from the Engineer and the Architect, suggesting that the inner portion of the pedestal should be constructed of brickwork, and the upper part faced with Portland stone and the lower with granite—as this mode of construction would be less expensive than the use of granite throughout—and that the cover of the pedestal, upon which the group will stand, should be of bronze. They estimate that the cost of the work if carried out in the way suggested, and inclusive of the cost of making the interior of the structure available for the storage of tools, would be about 1,000*l.*; and, having fully considered the matter, we think that this is a fair estimate. The expense incurred by the Works department in putting up and removing the temporary platform above referred to has amounted to about 93*l.*; and to this expenditure we have to ask the Council's sanction. We have requested the Finance Committee to submit a special maintenance estimate for 1,100*l.* to cover both these items of expenditure, and we recommend that the Council do approve the special maintenance estimate for 1,100*l.*, submitted by the Finance Committee in respect of expenditure incurred and to be incurred, under the resolution of the Council of March 29, 1898, authorising the Highways Committee to make the necessary alterations to the Victoria Embankment wall to enable the Boadicea statuary group, presented by Mr. J. I. Thornycroft, to be placed in the position indicated in that resolution."

Mr. Benn, Chairman of the Committee, asked leave to withdraw the recommendation.

Lord Hardwicke said he was about to move that the recommendation be referred back, on the ground that the sum asked for was much in excess of the value of the statue.

Mr. Benn said that her Majesty's Office of Works required that particulars should be furnished to them, and their statutory consent obtained, before any statue could be erected in London. That had been overlooked by the Committee until they were reminded of the statute by a communication from the Office of Works.

The report was then withdrawn.

Housing of the Working Classes.—The Housing of the Working Classes Committee recommended: "That it be the policy of the Council to proceed from time to time, as opportunity shall offer, with the acquisition, under Part III. of the Housing of the Working Classes Act, 1890, of sites available for the erection of working-class dwellings within the County of London; that all clearances which involve rehousing be done at the sole cost of the Council; that housing accommodation should be provided for a number of persons equal to that of the working classes displaced by any scheme under the Housing of the Working Classes Act, 1890, or under the provisions of any Improvement Act; that housing accommodation for persons displaced be provided within the County of London, but not necessarily in the immediate neighbourhood of the displacement, due consideration being given to the needs of those living on any particular area."

Mr. Dickinson moved, as an amendment to the first recommendation, that the matter be referred back to the Committee.

The Chairman of the Committee having agreed, after discussion, to take the recommendations back,

Lord Onslow moved that it be an instruction to the Committee to report further not later than that day three weeks. There seemed to be a disposition among some members of the Council to shelve the question.

Mr. Cornwall seconded the amendment, which was agreed to after some discussion.

Cinematograph Entertainments.—The Committee of the Theatres and Music Halls reported that they had considered the question of revising the regulations respecting the use of cinematograph lanterns in premises licensed by the Council for public entertainments. The regulations referred to were approved on January 25, and the Committee found from the experience which had been gained since then by the enormous development of these exhibitions as a means of popular entertainment that some revision was necessary. The Council's chemist had, therefore, after conferring with the Chief Officer of the Fire Brigade, the Superintending Architect of the Council, and some of the principal makers and operators of cinematograph lanterns in London, drawn up certain revised regulations which they thought the Council would do well to adopt. Among the regulations is the following :—"The cinematograph shall stand in a suitable fire-proof room, which shall be entirely enclosed; the floor also being fire-proof. The door shall open outwards and be self-closing. One of the firemen of the establishment shall be in attendance near the apparatus with a wet blanket and two buckets of water. No inflammable material shall be within two yards' distance from the enclosure. The audience and seats shall at no point be less than 8 ft. distant from the lantern; the audience being prevented from approaching by a suitable rail or barrier."

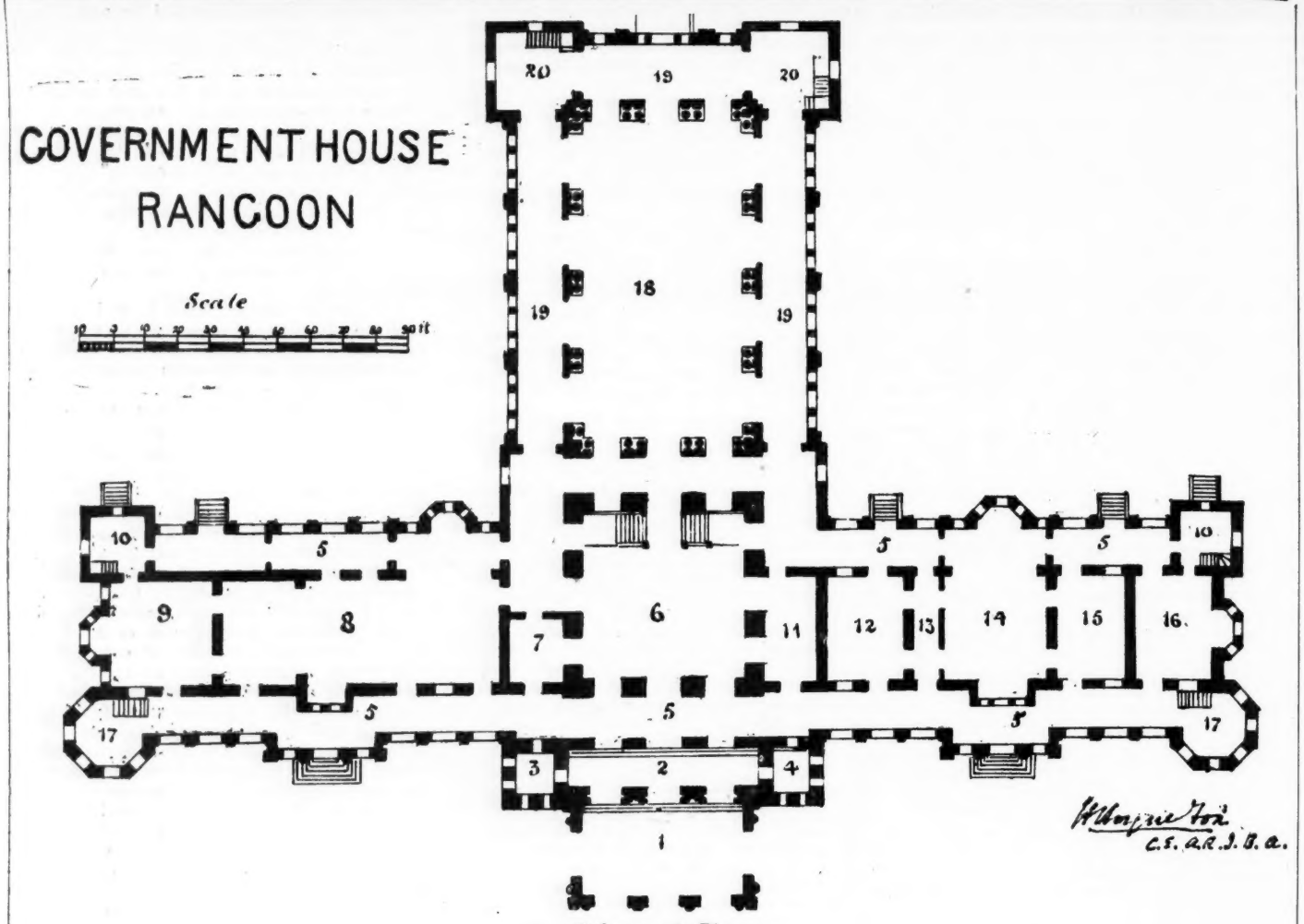
The regulations were all adopted.

Holborn to the Strand Street and Clare Market Scheme.—The Improvements and Housing of the Working Classes Committees recommended :—

(*a*) "That, having regard to the nature, extent, and importance of the Holborn to Strand improvement and to the special circumstances connected with the case, the Improvements Committee shall, notwithstanding existing references to the Committees, be charged with the clearance and laying out of all property comprised in the Clare Market scheme, and of the whole area between Holborn and the Strand, the sites agreed by the two Committees to be set apart for working-class dwellings being subsequently handed over to the Housing Committee. (*b*) That the Housing Committee do supply information to the Improvements Committee as to any negotiations now on foot for the purchase of any property on the Clare Market area. (*c*) That it be referred to the Finance Committee to make any necessary re-arrangement of the accounts between the two Committees. (*d*) That the Improvements Committee do consult the Housing Committee when formulating any street improvement which would appear to involve a scheme for rehousing the persons of the labouring class to be displaced, or when preparing for submission to the Home Secretary any rehousing scheme in connexion with a street improvement sanctioned by Parliament and undertaken by the Council."

The recommendations were agreed to, and the Council soon after adjourned.

PUBLIC IMPROVEMENTS, SHEFFIELD.—On the 3rd inst. Mr. Frederick H. Tulloch, M.Inst.C.E., Inspector to the Local Government Board, held an inquiry respecting the application of the City Council of Sheffield for sanction to borrow various sums of money for various purposes. Mr. Sayer (Town Clerk) explained that the Town Council had applied to the Local Government Board for sanction to borrow 30,638*l.*, for the provision of a refuse destructor in Penistone-road; 9,756*l.* for additional works at the Lumley-street refuse destructor; and 12,000*l.* for the completion of the Town Hall. Evidence was given by Mr. C. F. Wike (City Surveyor), who produced plans and estimates of the work to be dealt with.



References to Plan.

1. Carriage Porch.
2. Vestibule.
3. Visitors' Register.
4. Hydraulic Lift.
5. Verandahs.
6. Central Hall, with Grand Staircase.
7. Gentlemen's Cloak Room.
8. Dining Room and State Banqueting Room.
9. Billiard Room.
10. Servants' Stairs, with Lavatory and Water-closet under.
10a. Serviery.
11. Ladies' Cloak Room,
12. Clerks' Office.
13. Passage.
14. Lieutenant-Governor's Office.
15. Library and Aide-de-Camp's Office.
16. Private Secretary's Office.
17. Stairs.
18. Ball Room and State Durbar Room.
19. Ambulatory.
20. Ante-room and Stairs to Card Room.

Illustrations.

THE GOVERNMENT HOUSE, RANGOON.

THIS palatial building has been erected at Rangoon from the designs of Mr. H. Hoyne Fox, Executive Engineer of the Public Works Department in Burma (and also an Associate of the Institute of Architects), as an official residence for the Lieutenant Governor.

The site of the building is a fine piece of undulating and well wooded ground of over seventy acres in extent, in what was formerly known as Windsor Park. The plan is in the form of a cross, the head of which is the portico, which is 47 ft. in length, one story in height, and which is an indispensable adjunct to a house in Burma, and especially so in Rangoon, which has an annual rainfall of about 100 in., 90 per cent. of which falls between the months of May and October. The roof of this portico is flat and laid with Minton tiles, and thus forms a terrace to sit out on and enjoy the cool evening breeze during the warm months of the year.

The entrance-hall is 42 ft. square, and is carried up through the three floors and lighted from the top. It contains the grand staircase of solid teak wood, carved by Chinese and Burmese workpeople under the superintendence of a German woodcarver.

The labour required for the interior decorations of this and all the other rooms in the building had to be imported from Madras and from the Punjaub, some two thousand miles away, as the class of work attempted here was entirely new to the province.

The arm of the cross contains the reception and living-rooms, which are planned on the Indian barrack principle. All the rooms are arranged in line side by side, with verandahs front and back. The left wing on entering contains, on the ground floor, the banqueting hall, a room 70 ft. by 26 ft., with a recess and bay used as a private dining-room for every day. The walls and ceiling are hand-painted in oils. Beyond the banqueting hall is the billiard-room. The back verandah space is utilised for the pantry and serving-room. The kitchen, scullery, larder, &c., are placed in a separate building, 60 ft. away from the main building, and connected with it by a covered passage leading into the serving-room.

Above the dining-room is the State reception or drawing-room, 70 ft. by 26 ft., and 26 ft. in height. The ceiling is covered and hand-painted in oils, as are also the walls. This room is decorated in the Louis XV. style; and is cooled by means of electric fans dotted about on the window sills. The back verandah is converted into a conservatory, and contains some of the rarest and choicest varieties of ferns and orchids. The room over the billiard-room is the boudoir. The floor above contains nothing but spare bedrooms, each of which has its own bath-room.

The right wing on the ground floor is used entirely for the Lieutenant-Governor's offices. It contains a room for the clerks, and a room each for the private secretary and aide-de-camp, in addition to the Lieutenant-Governor's own study, 38 ft. by 26 ft., exclusive of large bay windows front and rear. The first floor of this wing contains the Lieutenant-Governor's bedroom, with two dressing-rooms and two bath-rooms *en suite;* also a similar suite of rooms known as "the State Rooms," and which are reserved for the Viceregal visits and for distinguished visitors. The floor above contains spare bedrooms, and the rooms occupied by the private secretary and the aide-de-camp. The loftiness of the floors permits of dividing up the back verandah into intermediate floors, thus giving a mezzanine between ground and first floor, and another between first and second floors. These intermediate floors are used as box-rooms, store-rooms, and linen-closets.

The ball-room, which is the principal room in the house, forms the foot of the cross. It measures 80 ft. by 40 ft., and is 40 ft. high in the centre of the ceiling. It is surrounded on three sides by a corridor and gallery 14 ft. wide. Columns and pilasters of the Corinthian order are arranged in pairs round the room, and carry a cornice and the coved fibrous plaster ceiling manufactured by Messrs. Geo. Jackson & Sons, of London.

The materials are red brick and terra-cotta, manufactured by Messrs. James Stiff & Sons, of Lambeth; who had no ordinary task to perform in supplying about 30,000 cubic feet of terra-cotta, manufactured from drawings made some 7,000 miles away, and sending them out ready for placing. This, however, was all successfully done; the terra-cotta arrived in regular consignments every three weeks, and the architect states that "each piece fitted exactly into the place intended for it, and no trouble was experienced either from crooked pieces or bad joints." This happy result, we may add, speaks also for the care with which the detail drawings must have been made; and architect and manufacturer may share the credit.

The entire building is lighted by electricity, having an installation of its own consisting of duplicate boilers, engines, and dynamos capable of working over 500 lights and storage batteries for 100 lights. The entire plant was supplied by Messrs. H. F. Joel & Co., of London. The steam is used for pumping up water from the well to the water towers on the two sides of the central gable, the water being lifted over 120 ft. The condensed steam is used for supplying hot water throughout the house.

In regard to sanitary arrangements, the whole of the water-closets (some twenty in number) and the bath-wastes flow into two large iron tanks placed in the lowest part of the grounds, and two hundred yards away from the building. These tanks are supported on brick pillars, and are sufficiently high to allow the municipal night soil-carts to get under them. The valve is then opened and the contents of the tanks let into the carts in which they are taken away. The tanks are moreover ventilated, and provided with man-holes, and, as they are emptied every night, there is

absolutely no possibility of any gases being generated in the pipes. This sanitary system, as designed by Mr. Hoyne Fox, was successfully carried out by Mr. A. Forbes, the manager of the Hygienic Plumbing Co., of Rangoon, who supplied all baths, lavatories, fittings, &c.

As far as style goes the building is rather a curious medley; whether its general design and character serve to emphasise the remarks we made the other day on the state of Anglo-Indian architecture, and on the result of leaving all important buildings to be carried out under the Public Works Department, is a point on which we will leave our readers to form their own opinion.

DINING-ROOM, PADDOCKHURST.

THE exterior of this portion of the house was shown in the Academy last year and published in the *Builder* of September 11, 1897, with a plan. The room is 43 ft. 6 in. long and 22 ft. 6 in. wide and 15 ft. 6 in. high. The walls are panelled for part of their height with the finest solid Spanish mahogany, and above that is a plaster frieze representing the history of locomotion, designed and modelled by Mr. Walter Crane. The plaster ceiling was executed by Mr. Priestly, the chimney-pieces at either end of the room are executed in Pavonazzo marble and alabaster.

The mahogany panelling was executed by Messrs. Gillow, and the furniture for the room was also made by them; the carving was executed by Mr. W. Aumonier. The door furniture, in German silver, was executed by Messrs. Singer, of Frome. Mr. Aston Webb is the architect.

NEW TOWN HALL, GODALMING.

PREMIATED DESIGN.

IN this design the Council Chamber forms the dominating feature towards the street, giving the façade a certain dignity and importance, while the general treatment is an unassuming one, suited to a small country town. It will be noticed that some attempt has been made to keep the character of the building on similar lines to the indigenous style of this part of the country.

The centre of the front would be executed in plaster on columns of Doulting stone, and the roofs covered with Westmoreland green slates.

With regard to the general arrangement, the municipal offices have been placed in the front block and the court and its accessories behind; the latter being so arranged that it can be disconnected from the offices if necessary.

The public hall is an existing structure.

LANCHESTER, STEWART, & RICKARDS.

SANITARY INSPECTORS' ASSOCIATION.

AN extraordinary general meeting of this Association was held on Saturday last at Carpenters' Hall, London Wall. After the election of seven new members, including one from Neath, in South Wales, and two from Belfast, the first Irish members enrolled, the new Chairman of Council, Mr. T. J. Moss Flower, C.E., Surveyor and Inspector of Portishead (Bristol) Urban District Council), delivered his inaugural address. Setting aside technical subjects such as those frequently treated of in the addresses of his predecessors, the Chairman, mainly for the benefit of the younger members, briefly sketched the history of the Association from its origin in 1883, adding some suggestions tending towards the further development of its usefulness. The zeal of its early promoters Mr. Jerram (Walthamstow), Mr. Legg (Hackney), the first honorary secretary, Mr. Hugh Alexander (Shoreditch) Mr. Lukes (Gravesend) and other inspectors had won the support of the Sanitary Institute, and many of its foremost members, including the late Mr. E. C. Robins, Chairman of the first meeting, Sir Edwin Chadwick and Sir B. W. Richardson, the first and second Presidents of the Association. Its prosperity had continued under its third President, Sir John Hutton, L.C.C., until the forty inspectors on the first roll of membership had now expanded to 668. A desirable object to keep in view was an amalgamation with other similar Associations in England and Wales: the Midland and North Western with 340 members, and South Wales and Monmouthshire with 130 members, as well as with Inspectors' Associations in Scotland and Ireland. It could no longer be said that the affairs of the Association were entirely managed by Metropolitan members, for a large proportion of the Council represented provincial districts, including its present Chairman, whose district was 140 miles from London. This nationalisation of the Association had brought with it increased cost of administration, although only the bare travelling expenses of country members of the Council were paid, and it had become necessary to consider whether the annual subscription of 10s., which included their excellent monthly journal, should be increased. The suggestion which had been made in one or two places that they were nearing bankruptcy was absurd in the face of the fact that they had upwards of 3,000*l.* invested, but the Chairman thought the income from the "Berridge Bequest" should be devoted to the special objects for which, as he believed, it was intended, instead of being applied to the payment of the current working expenses of the Association. Among such special objects might be included medals or prizes for the best papers read during the year. In the course of this short career 200 papers and addresses had been presented, and meetings had been held in a large number of towns. These addresses, together with the publication of their proceedings, and the interest awakened in public bodies in the towns visited, had done much to enlist public sympathy in the work of sanitary inspectors, but satisfactory as their progress had been, there was still much left to do. They had made no effort to bring in the young, and he thought they might with advantage organise a students' section. They ought also to try to build up a decent reserve fund, and, if possible, an emergency fund, and perhaps a benevolent fund. He had been thinking, too, that they might create a fellowship, to be granted to all members of from six to ten years' standing who chose to pay a higher subscription, which he suggested should not be less than one guinea and a half. In order that they might see themselves as others, who were competent to judge, saw them, the Chairman quoted from an article which appeared in the *Builder* of October 15, to which he thought the greatest publicity possible should be given. After giving the quotation, the Chairman added: "We should feel deeply indebted to the *Builder* for these sympathetic remarks, as it puts a part of our case in a way calculated to do us considerable service. It is very gratifying to receive recognition of this kind, and it shows the estimation with which our splendid work is being viewed." After referring at some length to the importance of two of the objects of the Association, superannuation of Sanitary Inspectors and security of tenure in office, the paper concluded with references to defects in, and the need for a consolidation of, the Public Health Acts, and to the decision of a judge of the High Court in a case recently given against the Walthamstow Urban District Council. In giving judgment, Justice Channell remarked, "If a public body comes to a person and either commences or threatens proceedings, such a person is no longer a volunteer. A person in such a position is under an obligation to do the work. It is immaterial whether the notice given to the plaintiff was a statutory notice or not. The law implies practical compulsion. In the present case there was no legal compulsion, but a more indirect compulsion is sufficient." If this decision should be upheld, perhaps the various public bodies would be more inclined to favour an alteration in the law upon the lines desired by Sanitary Inspectors.

An animated discussion followed on the motion of a vote of thanks, which was proposed by Mr. Dee, seconded by Mr. Grigg, and supported by Messrs. Alexander, West, Young, Foote, Thomas, and other members. The vote was carried by acclamation, Mr. Moss Flower replying to the observations made and returning thanks for the compliment.

A members' conference followed, when the balance-sheet and accounts were further discussed.

CHURCH INSTITUTE, CHESTERFIELD.—A Church Institute has been erected in the parish of Holy Trinity, Chesterfield. The building is situated in Newbold-road. There is provided accommodation for 350 persons, and the building comprises a large main hall and four class-rooms, which can, if required, be turned into one large second hall. Kitchen accommodation is provided on the basement. Messrs. Rollinson & Son were the architects, and Mr. W. Forrest, Chesterfield, was the contractor.

LIABILITIES AND RIGHTS OF OWNERS IN RESPECT OF THE DRAINAGE OF BUILDINGS.

THE session of 1898–9 of the Auctioneers' Institute was opened on Tuesday at the Lecture-hall, Chancery-lane, with the reading of a paper by Mr. Alex Macmorran, Q.C., upon "The Effect of Recent Decisions on the Liabilities and Rights of Owners in Respect of the Drainage of Buildings." Mr. E. Dobson, the new President of the Institute, occupied the chair.

The lecturer began by defining the terms drain, sewer, and curtilage, an important preliminary, because the duty of repairing and keeping in good order the drain devolved upon owners or occupiers, while the duty of repairing, ventilating, and cleansing the sewer devolved upon the Local Authority. The owner had the right to connect his drain with the sewer on condition of giving notice to the Local Authority, provided the connection could be made without trespass. A channel for receiving drainage, if it received such drainage from more than one building, was a sewer vested in the Local Authority, and it was none the less a sewer if it was laid in private ground. The decision in the case of Travis *v.* Uttley in 1894 had opened the eyes at once of Local Authorities and the public to the importance of the distinction between the two terms. In that case a number of houses in a street which belonged to the same owner had, for each group of three houses, a drain common to each group, the drain from the third house in the group being connected with the main sewer laid in the street. The Local Authority having found defects in one of these common drains, ordered the owner to repair the defects. The owner refused to comply with the order, and his refusal was justified by the decisions, first of a magistrate and subsequently of the High Court, it being held that the common drain was a sewer vested in the Local Authority, which they were bound to repair. The drawback to this situation, from the owner's point of view, was that he must give free access to the authorities to his premises at all times and must not himself interfere with, and in Urban Districts he must not build over, the drain without the consent of the Local Authority. Several legal decisions had established the curious fact that, if a drain was secretly or even wrongfully connected with what would otherwise be a drain, this would be converted into a sewer and the Local Authority must perforce accept it and take charge of it as such.

It was also curious to find that in a case where a drain which was common to three houses, had once become a sewer, it was still a sewer even if two of the houses were cut off, and the drain only served for the single house remaining. Other legal decisions showed that in certain circumstances even an open watercourse might become a sewer, and a pipe or conduit which merely drained off surface or rain water collected from different premises or different feeders into one main drain would constitute that drain a sewer, within the meaning of the Act. The importance of this was obvious in places where the separate system of drainage prevailed. Sewers made for profit formed a statutory exception, and remained private property, but a decision of Mr. Justice Romer in 1894 (Minehead Local Board v. Luttrill) was, in the words of the lecturer, "calculated to make the hair of the Local Government Board stand on end."

In that case a landowner, for the purpose of draining a town, the greater part of which stood on his own land, made sewers, and for the use of those sewers he levied and was paid a sewer rate by all persons whose houses were connected with his sewers. It was held that the sewers were made for profit, and were not vested in the local authority. A knowledge of the rights and liabilities of local authorities with regard to sewers was of evident importance to the owners of property. The owner might have a notice served upon him to abate a nuisance consisting of an alleged defective drain; but if he could show that that drain was in fact a sewer, he was clearly under no liability to comply with the notice, for the nuisance existed by reason of the act or default of the local authority in failing to perform their statutory duty.

In some cases notices were given in the belief that the defective drains notified were really drains and not sewers, but there was a widely spread suspicion that in other cases sanitary officers applied for such notices on

the chance of the owner being induced to do the work. In this connexion it was important to note the decision of Mr. Justice Channell in the case of North & Hillhouse *v.* Walthamstow Urban District Council, tried last month. In Section 19, Public Health Act, 1890, they had an attempt to amend the law with regard to the liability to repair defective drains by making the term "drain" include drains used for the drainage of more than one building; but this was "legislation by reference," a method that made references to numerous other cases necessary for a proper interpretation. In two recent cases, Bradford *v.* Mayor, &c., of Eastbourne, 1896, and Seal *v.* Merthyr Tydvil, 1897, more satisfactory decisions were arrived at, and these agreed with the interpretation put upon the section by the Lord Chief Justice and Mr. Justice Wills, which practically decided that if a channel for drainage which would otherwise be a sewer was on private land to which there was no access except to the owners, it was a drain and not a sewer.

A cordial vote of thanks to the lecturer was proposed by Mr. Field (ex-President) and seconded by Mr. Everill. A discussion followed, in which Mr. W. F. Noakes, Mr. H. Griffin, and Mr. Matthew Hale (Holborn Board of Works) took part. The vote was carried by acclamation, and Mr. Macmorran replied.

A vote of thanks to the President brought the proceedings to a close.

THE LONDON BUILDING ACT, 1894:

THE TRIBUNAL OF APPEAL AND CONVERSION OF BUILDINGS.

THE Tribunal of Appeal sat at the Surveyors Institution on Wednesday to hear an appeal by Messrs. Potter, Sanford, & Kilvington, solicitors on behalf of Mr. James Cusack (under Section 79), against the decision of Mr. Edmund Woodthorpe, District Surveyor of the Northern Division of the City of London, by his letter to the appellant on July 7, in which he objected to the conversion of No. 12, Ropemaker-street, which was erected other than for a public purpose, unless staircases were built to comply entirely with Section 80 of the Act, and unless the roofs and floors were made fireproof throughout. The members of the Tribunal sitting were Messrs. Arthur Cates (Chairman), A. A. Hudson, and Penfold.

Mr. Coningham Glyn, barrister, appeared for the appellants, and Mr. Seager Berry, from the Building Act Department, for the London County Council and the District Surveyor.

Mr. Glyn explained that the premises in question were used by Mr. Cusack for educational purposes. As long ago as 1893 that gentleman extended his school, which was then at 2, Finsbury-street, so as to include 11, Ropemaker-street, which adjoined, and still later he conceived the scheme of converting No. 12 of the same street as part of his school. Thus the whole premises would be brought under one lease, and be used for tutorial purposes. Now, in regard to the "conversion or alteration" of the premises, he submitted that the conditions under which the scheme was being carried out did not admit of the conclusion that they were being "converted."

Mr. Seager Berry objected that, if such were the case, the appellants could not proceed with an appeal under Section 79.

The Chairman said it was clear that Section 79 clearly contemplated, for the purposes of the appeal, a conversion or alteration. At the very outset Mr. Glyn submitted that there was no conversion or alteration; consequently the District Surveyor had no power, and there was no right of appeal to the Tribunal.

Mr. Berry pointed to certain rights the appellant had to magisterial proceedings.

Mr. Glyn said they were very reluctant to duplicate proceedings, and on further intimation from the Tribunal that they had no power to hear an appeal where one of the grounds was that there was no conversion or alteration the learned gentleman did not further press that argument, but enlarged upon the expensive nature of the work undertaken by Mr. Cusack and the adequacy of the staircase accommodation provided for. The building was, he remarked, only a public building through the inclusion of "places of instruction" in the definition clause of the Act, but not in fact. Mr. Cusack was perfectly willing to do what was reasonable, but he felt strongly that the District Surveyor was making upon him very stringent requirements, the necessity or propriety of which he left the Tribunal of Appeal to decide.

Two professional witnesses were called on behalf of the appellant. One of these, Mr. Collins, surveyor to Mr. Cusack, admitted that the whole building was, in the light of the Act of 1894, inadequate in its construction originally.

Mr. Seager Berry said the District Surveyor's requirements were stringent, but not more so than the circumstances of the case warranted. Criticising the character of the building, Mr. Berry dwelt upon the deficiency of staircases to the lecture rooms resorted to daily by 500 girls.

Mr. Edmund Woodthorpe, the District Surveyor, having given evidence,

The Chairman remarked that the Tribunal had formed a strong opinion upon the matter before them. They were not in favour of the appellant. They were quite content to leave it to the parties to withdraw the appeal, or to give their decision, or adjourn the case *sine die* with the view to some arrangement being come to.

Mr. Glyn said he for his part, would assent to the latter course.

The Chairman said they had not to forget that the building was daily visited by 500 young girls, and it was exceedingly desirable in the interest of an admirable institution that safety should be ensured. The members of the Tribunal had themselves visited and inspected the building, and several points occurred to them. They could not, however, embody these in a decision, nor could they be parties to a compromise as to the carrying out of the requirements.

Mr. Glyn assured the Tribunal that his client would make every endeavour to meet Mr. Woodthorpe's desires if that gentleman would also use his best endeavour to arrive at a compromise.

An order that the appeal be adjourned *sine die* was then made.

WEST OF ENGLAND BUILDING TRADE EMPLOYERS.

THE half-yearly meeting of the West of England and South Wales Federation of Building Trade Employers was held on Monday in the Council Chamber at Bridgwater. The President of the Federation (Mr. W. Symonds, of Cardiff) presided.

Mr. H. W. Pollard (President of the local branch) welcomed the delegates, and the Mayor of Bridgwater (M. F. C. Forster) emphasised the welcome.

On the motion of the President of the Federation a vote of thanks was accorded to the Mayor and Corporation for the welcome that had been extended them as well as for the use of the Council Chamber for their meeting.

The Secretary (Mr. H. J. Spear) read the half-yearly report. "The committee of the Federation," it stated, "strongly recommends members that, should any dispute arise in their district, the most speedy procedure towards a settlement is through the Board of Trade, provided the two parties consent to approach that tribunal, which can be done free of expense to the contending parties. Since the last meeting of the Federation, the Workmen's Compensation Act has come into operation, and has caused a considerable 'hue and cry' throughout the country. Many of the rates asked by the insurance offices were of a very extortionate character, but it is believed that the majority of builders have been treated in a very fair manner. Of course it is impossible, until the Act has been in operation for at least twelve months, to determine actually what risks and liabilities are covered by the policy, and what adequate premiums should be paid by the employers. It is pretty certain that the Act is not giving satisfaction, for even the legal profession, at its recent Congress at Swansea, passed a resolution condemnatory of its provisions. During the past six months the National Associations of Master Builders has been very actively engaged in the formation of a scheme for the federation of the United Kingdom into districts, and no doubt this will be accomplished before the annual meeting of this Federation next May, and then, it is to be hoped, all the local associations will centre their strength upon the federation of their own locality, and thus further unity of action amongst all branches of the building trade. In conclusion, the committee cannot too strongly emphasise the importance of organisation in the building trade. . . ."

The Treasurer (Mr. J. Linton, of Newport) read the financial statement, which showed a small balance in hand.

The President, in moving the adoption of the reports, congratulated them on the freedom from disputes they had experienced in the last six months. Strikes and lock-outs were a disaster to the community. Speaking with regard to the Employers' Liability Act, he characterised it as a failure in a great many points, but they would have to bear with it, and he thought the chief difficulty would be to find the premium that would have to be paid to cover all risks incurred. With reference to the value of their federation, he thought it could not be over-estimated, and at the same time they should not only join themselves, but urge on their friends the desirability of their being members as well. He did not at all say that they should federate for the purpose of crushing their men. He did not believe in that. He believed in meeting them on a fair and common ground, and making fair and equitable terms for carrying on their business, so that they could hold their own in the future as in the past. He particularly condemned the class of employers who stood as free lances and then held aloof from disputes or joined in them when and where it suited their own selfish purposes. These were the blacklegs of the trade amongst the masters. The President referred also to the apprentice question, and suggested that they should endeavour to make their apprentice clauses as elastic as possible, and also to put on an apprentice whenever possible.

The meeting afterwards discussed a special form of contract which had been agreed upon by the London Association with the Institute of Architects, and on the motion of Mr. W. Church, Bristol, seconded by Mr. E. Mudge, Exeter, it was decided that until a better form of contract emanates from the National Association that federation pledged itself to adopt this one wherever possible, or one based upon the conditions now in force by the National Association of Master Builders.

Mr. A. Krauss reported, as regards the federation scheme, that he was glad to say that since the West of England and South Wales Federation was started, a strong federation had been formed in the northern national centre, and also in the midland centre; the south-eastern was following, whilst the south-western, as far as he could see, had done good work. The National Association would shortly recommend the adoption of the Lancashire and Cheshire Federation rules as far as practicable in the formation of all federations. As to the apprenticeship deed, Mr. Krauss said the one drawn up and largely used could be had from the secretary for a few pence. Regarding the limitation of apprentices, that was a sore question all over the country; there was no time now to give them all the grievances that employers had in many towns owing to the unfair restriction imposed by the operatives, but he was glad to say they had none of that in Bristol. Their committee had gone fully into the question, and from information they found that limitation was very prevalent in the building trade. There was a scarcity of workmen in certain trades, and the limitation of apprentices made it still worse. He had said before, and he said it now, that to meet that difficulty their present mode of apprenticeship was wrong towards the apprentice and wrong towards his parents. A lad fourteen or fifteen years of age should not be required to be kept to his apprenticeship until he reached the age of twenty-one. They would agree with him that it did not take seven years to make a lad an ordinary mason, bricklayer, plasterer, or even a carpenter and joiner. If anything was in an apprentice, and his employer or his foreman took an interest in the lad, in a very few years he was as good as most of their average workmen. If a lad was out of his apprenticeship at nineteen years of age, he could leave his employer, seek a fresh shop or go to another town, and on reaching the age of twenty-one he was a much better man in every respect than if he had been apprenticed for two years longer. He was sure it would raise the standard of workmen, and it would meet the scarcity of men in some trades.

The meeting subsequently discussed the limitations concerning apprentices, and advised the sending round of a circular letter to certain associations on the subject.

Mr. A. Krauss then brought forward the subject of dividing the West of England and South Wales into three local associations—Bristol, Swindon, and Cardiff; but Mr. Blackburn, Newport, thought they were too young at present for that step. As they were now constituted, though their power was respected, if they were divided that might not be the case. Mr. W. Church, Bristol, agreed with this, and it was decided to leave matters as they are at present, but to try and stir up to fresh energy the smaller towns in the federation district.

It was decided to hold the annual meeting on the second Tuesday in May, at Cardiff.

Votes of thanks concluded the proceedings.

The Conference, on rising, adjourned to the Bristol Arms, where they were the guests of the local Association at dinner. Mr. H. W. Pollard presided.

Books.

Wells: The Cathedral and See. By the Rev. P. DEARMER, M.A. London: George Bell & Sons. 1898.

THIS is another of the series of small books on the English cathedrals which Messrs. Bell & Sons are issuing. The author has produced a good account of one of the most interesting of our Cathedrals, and, in dealing with the large amount of material relating to its history, and the many points of interest in the building itself, he has wisely given the more prominent place to the latter. This method is the more desirable, as not only is the space necessarily limited in a book of this kind, which aims at providing a guide of a superior kind for visitors, but also because the history of the Cathedral, from its documents, has been already dealt with in more than one instance, and in recent times by the Rev. Canon Church, whose excellent work on the early history of the Cathedral we reviewed in the *Builder* of November, 1895. The work before us acknowledges and alludes to these authorities, and gives in a sufficiently condensed form the general points of the history of the building, adding in a final chapter a short history of the diocese and biographical notes on the bishops. Chapters I. and II. are devoted to a description of the exterior and

interior respectively, and throughout are admirably illustrated by a series of drawings and reproductions of photographs, the majority of which are excellent, and appear to have been taken expressly for the work—a great advance on the custom hitherto very often adopted in guide books of re-using blocks from other publications, often of questionable merit.

A plan of the cathedral and cloister is placed at the end of the work, and while it no doubt serves its purpose, it would have been rendered more valuable had a list of the monuments been given. They are shown on the plan, but no reference is given to them. We notice also that although the discoveries on the east side of the cloister are mentioned in the letterpress, the plan shows what was commonly supposed to have existed before these excavations had been made, and is, therefore, misleading. Another point in which an improvement might be made is in dealing with the exterior, not only of the cathedral, but also of the palace and other buildings surrounding it. In the hands of a visitor to the cathedral it would, we think, be found more useful to have the interior description of the cathedral itself following the account of the exterior, and the various points of interest in the palace and other buildings dealt with in a chapter to themselves.

Apart from these points, we can cordially recommend the book to those who in visiting the interesting City and Cathedral of Wells require a handy and trustworthy guide, brightly written and well illustrated, and at a price which brings it within reach of every one.

Inspection of the Materials and Workmanship employed in Construction. By AUSTIN T. BYRNE, Civil Engineer. New York: John Wiley & Sons. London: Chapman & Hall, Limited. 1898.

WRITTEN by an American, printed and published in New York, this book naturally deals with construction as practised in the United States, but nevertheless contains a great deal of information valuable to British constructors, and particularly to all who have to take the responsibility of determining the satisfactory nature or otherwise of building work. It is useful in giving tests for quality of materials as well as practical hints on the carrying out of building. In a book professing in a moderate compass to traverse the whole field of building construction, it is natural that some subjects will be better and more fully treated than others. In this respect, the book now before us may be specially commended for the very full and lucid explanation of asphalt in its various forms—its composition, its manufacture, and its use. Apart from the value of the work as a useful book of reference, it also possesses interest as giving us a comparison between British and American methods. Thus we are interested in noting that in the States there exists—what we are now trying to get—a standard size of brick, adopted by the National Brickmakers' Association and the National Traders' and Builders' Association, although the standard size appears to have been departed from in some localities. The size given by the author as the average of English bricks is not, however, that with which we are familiar in the metropolis and the South of England.

The grading or division into qualities of timber is also fairly placed on a better basis in the States than in England.

Useful tables of strength, weight, and other properties of material, as well as some of the more frequently needed mathematical tables, render the book valuable, not only to the student, but also to the practitioner, who may have passed the embryo stage.

The Sanitation of Domestic Buildings. By FRANK LATHAM, M.San.Inst. &c., Assistant-Engineer and Surveyor, Borough of Margate. With Introduction by BALDWIN LATHAM, M.Inst.C.E., F.San.Inst. London: The Sanitary Publishing Company.

IN the science of sanitary engineering the words of Mr. Baldwin Latham carry weight, and it was, therefore, with considerable anticipation of pleasure that we turned to a book prefaced by his warm commendation, "I can confidently recommend its perusal to all sanitary officers and others interested in domestic sanitation." Further reading, however, of the preface (not "introduction") passing under his name led us to wonder whether he must really be held responsible for anything in it beyond the words of commendation and the signature. How else can we account for the following statements, that "Drainage and water supply arrangements. . . . should be closely considered, so as *to avoid* on the one hand, the pollution of the water supply, and, on the other hand, *the securing of a healthy habitation*,"* and that drains "may have a difference of temperature within a very limited period of *not less* than 180 deg. Fah."?* Similar examples of carelessness are scattered throughout the book; on page 9 alone we have "Oates Green" instead of "Oates and Green," "Nalethrie" for "Nalethric," and a specimen of Queen's English which the proverbial schoolboy would find it hard to beat—"Messrs. Jennings' stoneware pipes, judging from the large amount of work executed in this line by the firm all over the country with the most favourable results, is sufficient proof of the excellency of their manufacture." On p. 70 we are told that *the filth* in the pan of a pan-closet "holds water in the basin," but doubtless this is not what the author meant to say, nor did he mean to say (p. 71) that the D-trap under a pan-closet is "flushed through a fan spreader at the back," nor that a closet "upon being flushed is broken up and dashed . . . . into the trap," but all these things he *does* say.

A writer who is so careless and inexact in his language can scarcely be accepted as a safe guide in other matters, and several examples could be quoted to show that this is the case. A few must suffice. On p. 10 it is said that 4-in. and 6-in. iron pipes with ⅜-in. crusts, and 9-in. pipes with ½-in. crusts, "should stand a test of between 400 ft. and 500 ft. of water." This would lead the reader to suppose that the three pipes are of the same strength, whereas a 9-in. iron pipe with a ½-in. crust is more than twice as strong as a 4-in. pipe of ⅜-in. metal, and more than three times as strong as a 6-in. pipe of ⅜-in. metal. It is better to cool hot cement by exposing it to the air on a dry floor, rather than to mix it with water and then allow it "to stand awhile before use." It is a mistake to give less inclination to house-drains than is given by Maguire's well-known decimal rule; even these gradients are, in our opinion, too little, but gradients of 1 in 50 for 4 in. drains and 1 in 70 for 6 in. drains, as allowed by Mr. Latham on p. 21, while theoretically sufficient for drains flowing *not less than half full*, are in practice quite inadequate for house-drains, and especially for branch-drains from (say) water-closets, where the flow is intermittent and never large.

Other faults in the book might be mentioned, among them the omission of any mention of the boning-rod method of obtaining the required gradients of drains, but the game is not worth the candle. The book is interesting as a sign of the increasing attention which is now being given to domestic sanitation, and its preparation has doubtless been of service to the writer.

Chemistry in Daily Life. By Dr. LASSAR-COHN. Translated by M. M. PATTISON MUIR, M.A. Second Edition. London: H. Grevel & Co. 1899.

THIS book differs greatly from those elementary text books of chemistry with which we have become so familiar of late years. It is a book written in an unusually interesting manner, dealing principally with chemistry in its relation to the arts and manufactures. It embodies the substance of a course of popular lectures delivered by the author some years ago, but that it has been brought well up to date is evidenced by the fact that it discusses X-ray photography, and refers to the newly discovered substances, krypton, metargon, and neon.

The book is written in a style so simple and lucid that any one of ordinary intelligence can, without any previous scientific training, readily grasp its contents. It is not, however, of a description suitable for students studying for an examination; nor is it of any peculiar interest to builders, since the building materials, when mentioned at all, are necessarily treated in a very cursory manner.

As a readable elementary treatise on applied chemistry the book is unexcelled by any of the few similar publications.

A Pocket Dictionary of Hygiene. By C. T. KINGZETT, F.I.C., and D. HOMFRAY, B.Sc. London: Baillière, Tindal, & Co. 1898.

THIS is a very small book—really a "pocket"-book—containing, in alphabetical order, a short *résumé* of the heads of necessary information in regard to each subject named. For instance, under "Cubic space" we have notes on the requisite amount of cubic space for habitable rooms per individual; under "Cesspools," a summary of the requirements of the Local Government Board, with advice as to keeping them in a sanitary condition; "Duties of a Sanitary Inspector" are briefly summarised under letter D—(it should have been under S; "Sanitary Inspector—Duties of"); "Sewage," "Sewer-gas," "Slaughterhouses," &c., are each summarised in the same manner. A certain proportion of the contents, of course, is medical rather than constructional; but young architects will find the book useful, as a memorandum of what is required under each head, and where to look for it.

*The italics are ours.

Electrical Installation Rules. Special Risks Supplement. Issued by the Liverpool and London and Globe Insurance Company.

THIS pamphlet is supplementary to the well-known electrical installation rules issued by the above company. These were necessarily very general, and the Company intend to issue from time to time supplementary rules dealing with special risks. In this issue the special precautions necessary in wiring corn, textile, and oil mills, theatres and music halls, and central stations, are considered. The rules, of course, confine themselves solely to fire risks, and they certainly should be read by all interested in the class of risk considered. Apparently fire insurance inspectors have a very poor opinion of the precautions taken against fire by the engineers at electric light stations.

Guide to Round Timber Cubing Rule, and Round Timber Measurement Weight Tables for Railway Rates. By E. A. P. BURT. London: Wm. Rider & Son.

THESE little volumes belong to that class of "labour saving" compilations which, when once made use of, seem quite indispensable.

When the railway companies published their new rates and charges in 1893 it was found that the timber trade, in common with most industries, had been hit very severely. The regulations governing the computation of the weight of timber were revised, and the alteration was strongly resisted. The representations made to the companies subsequently induced them to "generously meet the wishes of the timber trade," as Mr. Burt puts it, with regard to the system of measurement, though we believe that many of the rates themselves remain slightly advanced. Mr. Burt's tables show at a glance the weight of timber according to the different computations in general use. The author claims that by his arrangement of the tables "every tub is placed on its own bottom," and this probably explains a certain amount of apparently unnecessary repetition which is observable. The figures in tables 9, 14, and 15, for instance, are identical.

We have before had occasion to speak of the practical character of Mr. Burt's publications, and those under notice will certainly be found serviceable by the trade, the "Guide" containing much useful information in addition to that indicated by the title.

Carpentry and Joinery. By FREDERICK C. WEBBER. Methuen & Co. 1898.

OUR modern movement in favour of technical education is creating a literature which promises to be as voluminous as that of primary or secondary schools. The work now before us is one of a series of text-books of technology, edited by Professor Garnett and Professor Wertheimer, and is written with a view especially to the examinations of the City and Guilds of London Institute. It can, however, be with perfect confidence recommended as an admirable elementary text-book on the subject of which it treats, its especial value lying in the very admirable series of illustrations of wood construction which are given. The requirements of technical education as now understood cause the inclusion of some attempt to explain the methods of drawing and the more common problems of geometry and projection, as well as the mechanics of carpentry. These subjects are treated clearly and concisely; indeed, we may sum up by saying that lucidity and brevity are the chief characteristics of this book.

Catalogue of Works Exhibited by Members of the Northern Art Workers' Guild, Manchester; with Chapters on the Crafts. (Manchester: Chorlton & Knowles.)

THIS beautifully got-up "catalogue" has really a permanent value, the greater part of it being occupied by short and well written essays on various forms of artistic handicraft. Mr. Walter Crane contributes "Notes on Needlework in the Present Century," Mr. Lewis F. Day writes on "Cotton Printing," Mr. W. Burton on "Pottery," Mr. H. Cadness on "The Craft of the Weaver"; there are several other such essays. Some of these, though short, contain a good deal of practical information on the subjects treated of; such as that by Mr. R. T. Hilton on "enamels." Mr. F. Foster, in treating on architecture within the compass of two pages, contrives to give a very good summary of the true functions of the art; and Mr. Edgar Wood, a Manchester architect who has taken much interest in the Guild, contributes some excellent remarks on the subject "From Nature to Design."

King René's Honeymoon Cabinet. By John P. Seddon, Architect. (London: B. T. Batsford. 1898.)

THIS is a book of description and illustration of a rather noteworthy piece of furniture, which is known to many architects in London, and which was exhibited at the 1862 exhibition, at the close of which application was made to purchase it by the South Kensington Museum authorities; it was, however, retained by the designer, Mr. J. P. Seddon, and last year was made over as a wedding gift to his daughter, Mrs. Birch, to whom it now belongs.

The general design of the cabinet is in the taste of one school of the Gothic revival, with much chamfering and inlay work in the stiff semi-French style which had then many admirers, Burges among the number. It would not in this sense appeal to the taste of the present generation of architects; but it is a powerful piece of work of its period. The panels were painted in oils by no less a trio of painters than Madox Brown, Rossetti, and Burne-Jones, with a series called "King René's Honeymoon"; photographs of each panel are given.

The cabinet was originally made simply as a piece of office furniture, to hold the owner's professional drawings, and to furnish an illustration of his theory "that in the unity and fellowship of the several arts lies their power." The present book is a kind of literary and artistic memorial of this interesting piece of work.

TRADE CATALOGUES.

"NOTES on Water Supply," by J. T. Rodda (King, Sell & Railton), though in book form and not issued by any special trading firm, really comes under this heading rather than under that of "Books," as it consists merely of descriptions of various implements or patents connected with water supply, interleaved with advertisements and diagrams of the articles described and recommended. As a catalogue *raisonnée* of plant and inventions connected with water supply it is likely to be useful, especially as it is fully indexed.—— Mr. W. Cassells (Kirkintilloch, Glasgow) sends us the illustrated catalogue of his patent "Clarifont" washing ranges. This is a contrivance to save time and, it is claimed, to economise water, in wash-basins for schools and public institutions. It consists of a range of earthenware basins each with a kind of second basin in the centre, somewhat like the crater of a lunar mountain; there are no taps, but when the basins are to be used the attendant turns on the water, which wells up from the bottom into the small centre basin, in which the hands are washed, and keeps overflowing into the outer channel or basin, whence it is carried off to the waste. The small basins are continuously full, and the water washed in is continuously carried away over the rim. There is no waiting to fill the basin, and it is stated that in this way each child in a school can wash his hands in thirty seconds and with the use of one quart of water. The economy of time is undeniable; we rather doubt the economy of water, but the "Clarifont" is quite worth the attention of architects employed on Board Schools and other lower and middle-class schools. It would hardly be accepted in high-class schools.——Mr. W. S. Merrikin (Hull) sends his catalogue of varnishes, paints, and brushes, oil colours in collapsible tubes; "liquid jet" for coating stoves and other iron-work, which is stated to require no polishing and to be free from unpleasant smell; and "Duranium," a sanitary washable water paint made in all shades and tints, and suitable for either inside or outside work.—— Mr. Archibald D. Dawnay sends a convenient little pocket catalogue of sections and prices of steel and iron compound girders, with tables of safe distributed stationary loads in tons.—— Mr. Frederic Barker (Wolverhampton) sends us an illustrated price list of his cabinet locks, for cabinets, cupboards, drawers, jewel-cases, &c.——The "Matchless" Gas Lighting Syndicate send us a description and illustrations of their automatic gas-lighter, which is intended to dispense not only with the use of matches or tapers for lighting gas, but also with the by-pass method. The description of its action, even with the aid of the sheet of diagrams, is not very intelligibly given; but it seems a rather elaborate and delicate instrument, and we should hesitate to pronounce any decided opinion on it before having examined and made use of a specimen.—— Messrs. Young & Co. (Westminster) send us a large and profusely illustrated catalogue of everything connected with stable fitting. The catalogue includes some excellent general rules and recommendations in regard to the planning and arrangement of stables, to which architects would do well to give attention. We can testify, from our own observation on stable plans, to the truth of the remark as to the frequent bad planning of loose-boxes in regard to facility in getting the horse in and out, from a desire to economise space. We are also entirely in agreement with them as to the sanitary improvement resulting from having wrought iron ventilating panels in the upper portion of the stall divisions, for the reasons given. The wall-tiling for end stalls, so that the horse may not have a rough wall to rub against, is another good point. Other suggestions on the treatment of walls and ceilings in stables are worth attention; as also the means of ventilation proposed. The catalogue is a remarkably full one, and should be preserved by those who are likely to be carrying out stable buildings.—— The United Asbestos Company send us their catalogue of "Salamander" decorations, illustrated from photographs of a number of modelled wall and ceiling coverings and other ornament, which show a variety of design and a fairly good artistic quality; but of course architects' own designs can also be carried out in this material, which has also important fire-resisting qualities. The same company also send us a catalogue of asbestos for use for practical purposes—fire-proof paint, mill board, packing for joints in pipes, &c., the "Gladiator" packing for marine and land engines, piston packing, and for a great many other purposes.——The Bostedo Pneumatic Tube Company (London, New York, and Chicago) send us a catalogue of pneumatic tubes for cash-carrying, &c., in substitution for and as an improvement on the "overhead railway" system used in some large establishments. That they are an improvement on that system we have little doubt, though the style of the catalogue has a little too much of the "spread-eagle" about it.

BOOKS RECEIVED.

REPORT OF THE CHIEF LABOUR CORRESPONDENT ON STRIKES AND LOCK-OUTS: Board of Trade Labour Department. (Eyre & Spottiswoode.)

THE STONES OF VENICE. By John Ruskin, LL.D., D.C.L. New Edition in small form. Vol. III. (George Allen.)

PUBLICATIONS OF THE BRITISH FIRE PREVENTION COMMITTEE.—Vol. I. (Published by the Committee).

EGYPT EXPLORATION FUND: Archæological Report 1897-1898. Edited by F. L. Griffith (Kegan Paul & Co.; Bernard Quaritch; Henry Frowde).

EXHIBITION OF LITHOGRAPHS.—The Loan Exhibition of Lithographs which has been organised by the Department of Science and Art, at the suggestion of the Society of Arts, to commemorate the centenary of the invention of lithography by Aloys Senefelder in 1798, will be opened on Monday, November 21, and will remain open until February 28 next. The exhibition has been arranged in a building adjoining the Machinery Section, Southern Galleries, South Kensington Museum (entrance on the west side of Exhibition-road). The public will be admitted, without payment, at all hours when the museum is open.

Correspondence.

To the Editor of THE BUILDER.

GODALMING TOWN HALL COMPETITION.

SIR,—In your last week's issue a letter appears in reference to the above, that, while purporting to quote the conditions of competition, in reality reconstructs them somewhat, thus (doubtless unintentionally) conveying a false impression. The clause referred to reads as follows:—

"A passage is required along the south side of the present Public Hall, as indicated on block plan, and if the fire-engine shed is built on the back land, this passage will be required to be at least 10 ft. in width, in order to allow of fire engines being got in and out. If, however, the engine house is erected facing Bridge-street, a passage 6 ft. in width will be sufficient."

Our design made this passage over 6 ft. wide, and *provided in addition* a 10-ft. way parallel to it for the engines. Surely to any one using common sense this fulfils the requirements of the above clause. Last week's communication suggests that our design omits to provide the way into Bridge-street for the engines.

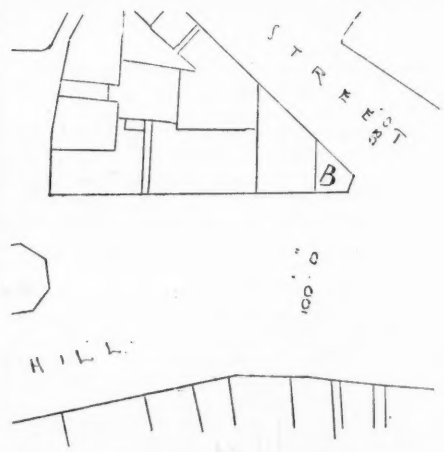
LANCHESTER, STEWART & RICKARDS.

*** What we said in our comment on the letter of "A Competitor" was that, according to the statement in the "Answers" to Questions, "the 10-ft. passage *in the position referred to* is obligatory on competitors." It unquestionably reads so. The Committee demanded a passage in the position coloured yellow on the plan, viz., through the centre of the site; the only thing that was optional was that it might be narrower than shown if the engine house were not at the back of the site. According to all logical reading of the "Instructions" the central position of the passage was compulsory. If the Committee meant that the position of the passage was optional, so long as it was provided somewhere, they should have said so. They did not say so; and therefore that position was binding on the competitors. As a general rule we are by no means ready to print letters from unsuccessful competitors complaining of unfair treatment—such complaints are often made on very futile grounds; and in this case we declined to print the letter unless the printed Instructions and Plan were sent in for our inspection; but a consideration of them left us in no doubt whatever as to the sense in which the Instructions and Plan, taken together, must be read. We have no doubt that the best design has actually been chosen; but unfortunately its choice involves, under the circumstances, a technical injustice to the other competitors.—ED.

MODEL BY-LAWS AND LOCAL REQUIREMENTS.

SIR,—Your comment in your issue of the 29th ult. on the inelasticity of the model by-laws raises a point on which considerable inequality and hardship exist in many old towns.

I send you a tracing of the centre block of this town, whereby it will be seen that the open spaces are very considerable and that the buildings at points A, B, and C have unlimited aid and light all round them, and yet, under the model by-laws, if they were burnt down, they could not be rebuilt. On the occasion of a visit of a Local Government Official, some years ago, I pointed out particularly the case of site B, and showed that, with its road of 100 ft. wide on the one side, 53 ft., on the



other, and unlimited space in front, it was a case not only of hardship to the owner, but of detriment to the town if this building would have to remain a ruin because of the impossibility of giving it the enclosed yard demanded by the by-law. The reply was to the effect that it was impossible to carry out reform without pressing hard on some one, and no hope was held out that a case like this could be dealt with on its merits. Many other sites in these blocks would, in case of a general conflagration, be rendered

quite useless, and while some of them would be the better for more air space, others, like that which I have mentioned at length, are well provided for in that respect, although they do not meet the requirements of the by-law.

When we consider that in the Metropolis these places could be again built upon, it does seem absurd that in a comparatively small country town the District Council would either have to break its own by-laws, or commit the absurdity of rejecting all the plans for rebuilding. If it is not considered desirable to entrust a District Council with discretionary powers, surely a County Council or Local Government Board official could deal with exceptional cases of this kind.

Alnwick. GEORGE REAVELL.

The Student's Column.

SOUND, LIGHT, AND HEAT.—XIX.

LIGHT: REFLECTION.

THE laws appertaining to the reflection of light are, practically, the same as those for heat. When a ray of light falls on a polished surface it is reflected as follows:—

1. The angle of reflection is equal to the angle of incidence.

2. The incident and the reflected ray are both in the same plane with the perpendicular to the reflecting surface.

In regard to multiple images formed by glass mirrors Ganot remarks (*Op. cit.*, p. 510) that whenever light is transmitted from one medium to another, only some of the rays get through; the remainder are reflected at the surface bounding the two media. The student will remember that almost the same effect results from the reflection of sound when a sonoriferous beam is passing through media of different densities. The multiplicity of images is objectionable in observations, and, accordingly, metal mirrors are much to be preferred for accurate scientific work.

In spite of the general laws of reflection, just enunciated, it is known that the light incident on an opaque body separates into three parts, viz., one part is regularly reflected according to those laws, another is reflected in all directions, whilst the third is absorbed by the body on which it falls. That part which is scattered in all directions is known as scattered or diffused light. Ganot observes, that the light which is reflected regularly, does not give us the image of the reflecting surface, but that of the body from which the light proceeds. If, for example, a beam of sunlight be incident on a well-polished mirror in a dark room, the more perfectly the light is reflected the less visible is the mirror in the different parts of the room. The eye does not perceive the image of the mirror, but that of the sun. If the reflecting power of the mirror be diminished by sprinkling on it a light powder, the sun's image becomes feebler, and the mirror is visible from all parts of the room. Perfectly smooth, polished reflecting surfaces, if such there were, would be invisible. The beam of light itself is only seen in the room owing to irregular reflections from the particles of dust, and the like, which are floating in the air. Tyndall has shown that when this floating matter in the air in an enclosed space is completely removed the beam of sunlight or the electric light is quite invisible. The atmosphere diffuses the light which falls on it from the sun in all directions, so that it is light in places which do not receive the direct rays of the sun.

From what has already been said, it is evident that the intensity of the light reflected is always less than that of the incident light; the intensity increases with the obliquity of the incident ray.

A practical application of reflection from the surface of a flat mirror is employed in the measurement of small angles. In one instrument for this purpose the mirror being carefully adjusted in position by means of a telescope is made to reflect a spot of light which is seen at one end of the object to be measured; the source of the spot is then caused to move with the mirror whilst the latter is slowly revolved until the light spot arrives at the other end of the object. By a simple contrivance the number of degrees through which the mirror has been turned, which also gives the measurement of the desired angle, is readily ascertained. Another practical application is the heliograph, for reflecting light to distant stations; the signaller can deflect the mirror through a very small angle either to the right or left, and the observer at the distant station sees corresponding flashes, so that a code being arranged messages may be flashed over long distances. In a similar manner the electric search light is also utilised for flashing signals either direct or by reflection from the clouds.

The reflection of light from curved surfaces is not quite so easy to understand—at any rate, at the first glance. Curved mirrors are of various kinds, but those most frequently used are either spherical or parabolic. One of the prime objects of the curved concave mirror is to collect the rays of reflected light into a single point, and to intensify the light at that point; or, a number of rays may be reflected to different foci, so that there shall be several points of "intensified light" from one mirror when the reflecting surfaces of the mirror shall be arranged accordingly.

In reference to parabolic mirrors reflecting on the concave surface, all rays parallel to the axis after reflection meet in the focus of the mirror, which is situated in the centre of, and near the surface of, the mirror. On the other hand, when a light is placed in that focus, the rays incident on the mirror are reflected parallel to the axis. Light thus reflected maintains its intensity for a great distance. Practical applications of the parabolic reflector are in lighting dark staircases and passages. By an arrangement of two or more such reflectors the rays from a single light may be reflected in different directions, as required. This form of reflector is also used in carriage lamps, and for the head and tail lights of railway trains.

Perhaps the greatest use of the parabolic reflector is for lighthouse purposes, though in lighthouses of the first order the method is now largely superseded by lenses, as will hereafter be described. In 1867 the parabolic metallic reflector was used in 180 lighthouses in the United Kingdom, or about one half of those erected at that date. The idea of its application to sea-lights, however, dates back to the year 1784, following on the discovery of the cylindrical burner with its double current of air. It was found that the chimney of that burner which was essential to perfect combustion, served likewise the indispensable purpose of carrying off the gaseous products, which, in previous forms of lamps, by tarnishing the surface of a reflector, rendered its adoption quite useless. Argand, about the year mentioned, perceived the applicability of the parabolic reflector for sea-lights. Quite independently, the engineer of the Northern Lights Board, made a parabolic reflector of facets of silvered glass fixed in a plaster mould, which was erected in 1787 at Kinnairdhead, in Aberdeenshire.

Brewster* showed how much greater is the loss of power when rays are reflected from a metallic surface, especially if hammered into shape (as in the case of the ordinary parabolic reflectors then in vogue), than when transmitted through glass lenses or prisms of moderate thickness.

Mr. J. T. Chance, C.E., observes† that apart from these considerations the lighthouse reflector gives place to the dioptric instrument for two other reasons mainly. First, the parabolic mirror irremediably causes great waste of light, and therefore of oil, by useless divergence; secondly, it is only by an enormous multiplication of reflectors, far beyond what, in the presence of a better system, engineering principles would justify, that the power of dioptric sea-lights can be rivalled. Theory and experiment concur in this result.

Mr. Thomas Stevenson placed a lenticular front upon the parabolic mirror, so as to condense the cone of light which would otherwise pass off in its natural state of divergence; and in place of the corresponding back portion of the reflector, he substituted a spherical metallic mirror, which returned the flame upon itself though inverted. Let it be assumed that, with this modification of Mr. Stevenson, the proportion of the luminous sphere, which the parabolic mirror and its adjuncts condense, is equal to that which is embraced by a complete dioptric instrument; still the defect of wasteful divergence remains. Mr. Chance (*Op. cit.*, p. 495) remarks that there is a practical limit to the dimensions of the reflector; and perhaps it would be found inexpedient to extend the size beyond that of the Scotch instrument, the aperture of which had a diameter of 25 in. If, again, with a given maximum size of reflector the diameter of the burner be enlarged without the introduction of a further wick, there will be a corresponding increment in the divergence of the beam, but very little, if indeed any, addition to its mean intensity.

In order to obtain an intensity of illuminating power at all approaching that of a dioptric instrument of the higher orders, there was no resource but to multiply the number of the separate reflectors. For the purpose of estimating the exact multiplication of reflectors which would be required, recourse must be had to experiment. M. Fresnel drew up an elaborate account of the comparative advantages of the system of metallic reflectors and dioptric instruments for sea-lights; and a later author, M. Reynaud, made a very careful comparison, based upon actual photometrical observations. He showed that a Fresnel light of the fixed kind, even of the second order, can be equalled by reflectors only by multiplying them to the number of sixty, each giving about the same quantity of light in the horizontal plane as the English reflector; and that the consumption of oil would be seven times more in the employment of these reflectors than in the case of the dioptric apparatus. In England a fixed light of reflectors had them, generally, in the proportion of 24 to 27 in number for 360 deg. Yet, even with all this multiplying of reflectors, the perfection of uniformity in the distribution of light over the horizon, which accompanies the fixed dioptric light, cannot be imitated by parabolic mirrors.

From the foregoing estimate of the number of reflectors required for an apparatus which would be equal in power and general effect to a first order dioptric fixed light, it may be calculated, approximately, what arrangement of reflectors would be necessary in order to produce the effect of a first order (1867) dioptric revolving apparatus.

* "Trans. Roy. Soc. Edin.," vol. xi., 1831.

† "Min. Proc. Inst.C.E." vol. xxvi., 1867, p. 494.

GENERAL BUILDING NEWS.

OLD GREYFRIARS CHURCH, ABERDEEN.—The plans for the restoration of this structure, prepared by Mr. A. Marshall Mackenzie, A.R.S.A., architect, Aberdeen, have now been approved of by the authorities of the University of Aberdeen, the Greyfriars Kirk-session, and the Presbytery of Aberdeen, and will next be submitted to Aberdeen Town Council for their sanction as heritors. It is considered unlikely that such sanction will be obtained, as most of the Town Councillors would prefer that the old church be removed altogether and a new one built on a different site, in accordance with the scheme for the extension of Marischal College buildings ratified by Act of Parliament.

ST. JOHN'S CHURCH, ABERDEEN.—A new aisle at St. John's Episcopal Church, Aberdeen, erected from plans by Mr. A. Clyne, architect, Aberdeen, was opened and dedicated last week.

CHURCH, BROMLEY.—The consecration of the new Church of St. Mark, Bromley, which has been built on a site at the junction of Sandford and Westmoreland roads, took place on the 22nd ult. The church consists of chancel, having space for an organ, and choir and clergy vestries, with heating chamber below on the north; it is intended to build a side aisle, having accommodation for about sixty persons, at a future date on the south side of the chancel. The church has seating accommodation for 582 persons. The nave is of five bays, divided from the chancel by a chancel arch, and from the north and south aisles by arcades with clearstories above. At the west end of the nave is a gallery, having a stone screen, and approached by a stone staircase in the south-west lobby. The tower is placed at the north-west corner, and is separated from the nave by the north aisle; the lowest stage forming a porch. The main entrance is in the west face of the tower, with inner doors into the north aisle. Secondary entrances and exits are placed at the west end of the south aisle, and the east end of the same aisle. The latter entrance is intended more to serve the future chancel aisle than for present use. The external work is faced with red brick, Doulting stone being used for tracery of windows, copings, &c. Internally the walls are plastered, the arcades and dressings being in Doulting stone. Owing to the low level of the site, the nave floor has been kept some 4 ft. above the natural level of the ground. Messrs. Powell & Sons have, in conjunction with the architect, arranged a scheme of stained glass to fill the windows, to be put in hand as opportunity offers. The aisle windows of the nave will be filled with subjects representing the Life of our Lord. The first of these, "The Visit of the Shepherds and the Wise Men," is being given by Mrs. Aitken, and is now being painted. The tower will not be carried at present beyond the lowest stage; when complete the parapet will be about 80 ft., and the vane about 114 ft. above the ground. Messrs. Crossley & Son, of Bromley, have been the general contractors for the work, and have also made the nave seats, sedilia for the clergy, &c. The carving has been done by Messrs. Farmer & Brindley, who also made the choir stalls, the lectern, and the font. The heating

work has been carried out by Messrs. Weeks & Sons, of Bromley; and the altar rails and gas-fittings made by Messrs. Hart, Son, Peard, & Co. Mr. Evelyn Hellicar, of London and Bromley, was the architect.

ST. ANDREW'S PRESBYTERIAN CHURCH, BLACKROCK, DUBLIN.—The memorial stone of St. Andrew's Presbyterian Church, Blackrock, was laid on the 29th ult. The new church, which is situated on the south side of Mount Merrion-avenue, and has been built about 30 ft. back from the road, is an octagonal structure, measuring 50 ft. in diameter internally, covered by a large cupola, with lantern light at apex. A square tower, 80 ft. high, adjoins the side of the octagon next to Mount Merrion-avenue, and on the opposite side an apse has been formed to contain the pulpit, communion table, and font, which are placed on a raised platform. The plans have been prepared and the work carried out under the superintendence of Messrs. Murray & Foster, architects, of London. Mr. Patrick Caulfield, of Booterstown, is the builder, and Mr. Daniel Develin the clerk of works.

CHURCH, NEWPORT, MON.—The new Church of All Saints, situate in the new district of Brynglas-road, Newport, was consecrated on the 1st inst. by the Lord Bishop of Llandaff. The church has been erected from the designs of Messrs. Graham, Hitchcox, & Co., by Mr. E. C. Jordan. It is Early English in style; and has been built of Risca stone, with Bath stone dressings. It consists of nave and two aisles, with a tower, and has seating accommodation for about 600 worshippers. A stained-glass window has been placed in the east end of the church, and a somewhat smaller window has been placed in the chancel. The reredos, pulpit, lectern, reading desk, &c., are of oak.

PRESBYTERIAN CHURCH, NOTTINGHAM.—On the 4th inst. the foundation-stone was laid of a new church at the corner of Villa-road and Mansfield-road. The architects are Messrs. Brewill & Baily. The freehold site cost 3,400*l.* in all, and the architects estimate that 4,500*l.* will cover the expenses of erecting the church. It is to be built in the late Gothic style, with Derbyshire stone, and will accommodate about 520 people.

CHURCH, STECHFORD, WORCESTERSHIRE.—The new Church of All Saints, Stechford, erected to take the place of an old iron structure, was dedicated on the 3rd inst. by the Bishop of Worcester. The building, which is of red brick with stone facings, is not yet complete, but it is sufficiently advanced to meet present requirements. It consists of nave and chancel, with north and south aisles, and it is intended in the future to add a baptistry and tower. Seating accommodation is provided in the church for 504 persons. The building has been erected by Messrs. Collins & Godfrey, of Tewkesbury, from the designs of Mr. J. A. Chatwin, of Birmingham.

BAPTIST CHURCH AND SCHOOLS, OLDHAM.—The memorial stones were laid recently of these buildings, which are situated in Chamber-road. The chapel faces Chamber-road, where its two principal entrances are situated. From each of the vestibules there will be a staircase leading to the gallery above, and between the vestibules a cloak-room is provided. The chapel is arranged with two aisles, and a gallery at the end next to Chamber-road. The seating will accommodate 470 adults. A feature is the provision of a chancel with open baptistry in the middle, choir benches at each side, and organ-chamber. Vestries are provided on the side next Emily-street for minister and deacons, and in addition the class-rooms of school are arranged so that they are available for use by male and female candidates for baptism. Lavatories will be provided. The school is arranged on the central hall system, with a gallery at one end, and will accommodate 400 scholars. Seven class-rooms will be provided on the ground floor and two on the first floor. Kitchen, heating cellar, and recreation-room will be provided in the basement. The exterior of the building is being faced with Accrington bricks, with terra-cotta moulded strings and stone dressings. The estimated cost amounts to about 5,000*l.*, and the contract has been let to Messrs. J. & D. Blunn, builders, of Oldham. The plans, &c., have been prepared by, and the work will be carried out under the supervision of, Messrs. Winder & Taylor, architects, Oldham.

NEW CHAPEL AT CARMEL, HOLYWELL.—On the 24th ult. the memorial-stones of a new Calvinistic Methodist Chapel at Carmel, near Holywell, were laid. The architect of the new chapel is Mr. Thomas Parry, Colwyn Bay, and the contractor is Mr. Edwin Hughes, builder, of Holywell. The cost will be about 1,000*l.*

ST. LEVAN WESLEYAN CHURCH, DEVONPORT.—The St. Levan Wesleyan Church was opened on the 2nd inst. The building, which fronts Stuart-road, is constructed of limestone with Bath stone dressings, and has a capacity for 500 sittings. The roof is open timbered, and there are six two-light windows on either side, and a tracery window at the north end, where provision has been made for a gallery to accommodate about eighty persons. A lobby forms the entrance from Stuart-road, and at the other end behind the rostrum there is an organ chamber. Underneath this are two vestries, which utilise the space between the school-room and the new chapel. Grundy's system of hot-air heating has been adopted, the fittings throughout are of pitch-pine, and the open bench end pews have yellow deal panels. There is also a minister's vestry, with a private entrance from the side street. Mr. W. N. Richards, architect, of Devonport, prepared the plans, and the building contract has been executed by Mr. H. Kerswill, of Plymouth.

CHURCH, GLASGOW.—Building operations have now begun in connexion with the new Cathcart Free Church. The site is on the south side of Newlands-road, and near to the Cathcart-road. The buildings will be of red stone. The architect is Mr. John Hamilton.

BOARD SCHOOL, TONG, YORKSHIRE.—The new Board school which has been erected at Highfield for the Tong School Board has been built on the central hall principle. A caretaker's house has also been built. The school itself, in which both boys and girls will be instructed, has four entrances, and the central hall is 65 ft. long by 33 ft. wide. There are seven class-rooms, each 26 ft. by 24 ft., with glazed partition from the central hall, and a board-room 24 ft. by 18 ft. The school is heated by means of hot water on the low-pressure system. A covered playground has been provided for each sex. The cost of the works, exclusive of the site, is about 7,000*l.* Messrs. W. & J. B. Bailey, of Bradford and Keighley, are the architects, and the following firms have been engaged on the works:—Messrs. Coates, Murgatroyd, & Son, Idle, masons; Mr. Richard Raper, Dudley Hill, joiner; Messrs. Thomas Nelson & Son, Bradford, slaters; Messrs. J. Booth & Son, Dudley Hill, plumbers; Messrs. J. Laycock & Sons, Stanningley, plasterers; Mr. D. E. Hutton, Shipley, painter; the heating apparatus was provided by Messrs. J. Booth & Son, and by Mr. Thomas Mears, Bradford; the wrought-iron work by Messrs. Taylor & Parsons, Bradford; the ventilators by Messrs. Cousland & Mackay, Glasgow.

MACHYNLLETH COUNTY SCHOOL, MONTGOMERYSHIRE.—The Machynlleth County School was opened on the 25th ult. Accommodation is provided for seventy-two scholars in four class-rooms. Three of the class-rooms are separated by folding partitions, which may be opened to throw the three rooms into one for a general assembly of the school. The fourth class-room is fitted as a science lecture-room, with raised gallery for students. This room will be in close proximity to the new chemical laboratory which it is intended to build immediately. The girls and boys have separate entrances, cloak-rooms, and lavatory accommodation. On the girls' side is a cooking kitchen. A master's room and mistress's room, with storeroom between, complete the plan. Space for further extension is allowed at the rear and side of the building. The architects are Messrs. Hipkiss & Bassett, Aberystwith and Aberdovey; and the contractor Mr. Humphrey Jones, Penegoes.

SCHOOLS, SETTLE, YORKSHIRE.—New infant schools have just been opened at Settle. Mr. H. Ross, architect, of Accrington, prepared the plans, which provided for a room, 48 ft. by 24 ft.; a babies' room, 24 ft. by 17 ft., with lavatory and cloak-room, and an accommodation room some 10 ft. square. In the north end of the old school there is also provided a room for the upper scholars, and cloak-rooms and lavatory have also been built for this portion of the school. In the new schools the floors have been laid with wooden blocks. The contracts for the new schools were as follows:—Builders, Messrs. Brassington Bros. & Corney; joiners, Messrs. Parker Bros.; plumbing, Mr. Wm. Hayton; painting, Mr. Wm. Horner; and hot-water apparatus, Mr. John Handby.

SCHOOL, BRISTOL.—The new Higher Grade Board School in Fairfield-road was opened on the 1st inst. The range of buildings has been erected on a three-cornered site on the sloping ground of a hill, the mixed school, science school, and infants' school being grouped in triangle fashion so as to leave a small playground in the centre and larger playgrounds in two of the angles of the land. The mixed school has a central hall, 62 ft. by 30 ft., on the ground floor, and a similar apartment on the floor above. Round these rooms are grouped a series of class-rooms, and there are also teachers'-rooms, store-room, cloak-room, &c. The science school is provided with a number of rooms, including chemical and physical laboratories, apparatus-room, and lecture and drawing-rooms, while beneath the science floor there is a large workshop. The infants' school has a central hall, 50 ft. by 24 ft., with four class-rooms and a teachers'-room opening out. The school is designed to accommodate 1,054 pupils. The architect of the buildings was Mr. W. L. Bernard, and Mr. John Perkins, of Redland, was entrusted with the contract.

THEATRE, HOLBECK, LEEDS.—A theatre (the Queen's) is being erected in Holbeck, at the corner of Jack-lane and Meadow-road. The architects are Mr. W. Hope and Mr. J. C. Maxwell, of Newcastle-on-Tyne. Mr. S. F. Davidson, of Newcastle-on-Tyne, is the contractor.

COTTAGE HOSPITAL, THETFORD.—A new Cottage Hospital has been erected at Thetford. The honorary architect was Mr. H. J. Green, of Norwich; and the builders, Messrs. Boughton & Son, of Thetford.

SCHOOL OF ART, NEWARK.—The foundation-stone of a new school of science and art was recently laid at Newark. The building will cost about 3,200*l.*, and is being erected by Mr. W. Smith, builder, Newark, from designs by Messrs. Mallows & Grocock, architects, Bedford. In addition to two large class-rooms, provision is made for a lecture room, a life room, an antique room, elementary art room, wood-carving room, dark room, and chemical laboratory, besides a master's room, cloak-rooms, and a room for the caretaker.

ST. GODRICS CATHOLIC SCHOOLS, DURHAM.—These schools, for about 700 pupils, were recently opened. The material employed in the exterior is red pressed brick with slated roof. The building consists of two stories—the upper one being the boys' and girls' department, and the lower one the infants'. The whole works have been carried out by Mr. Francis Caldcleugh, of Durham, from the design of Mr. Charles Walker, architect, of Newcastle-on-Tyne.

BUILDING ON THE VICTORIA EMBANKMENT.—Nearly all of the ground in Whitefriars, along the Victoria Embankment, between the Temple Gardens and Sion College and the Thames Conservancy Offices, is now taken for building purposes. At the corner (west) of Temple-avenue, Higgs & Hill, Limited, contractors, are building—after Mr. W. Emerson's designs—premises, to be known as Hamilton House, for the Employers' Liability Assurance Corporation; at the opposite corner of Temple-avenue the National Telephone Company have taken a site for new offices to be erected by Messrs. Foster & Dicksee, of Rugby and Manresa-road, S.W., from the plans and designs of Mr. A. N. Bromley. At the corner (west) of Carmelite-street, the head offices of the Metropolitan Asylums Board (illustrated in the *Builder* of June 11, 1898) are being erected by Messrs. J. Shillitoe & Sons, contractors—the architect is Mr. Edwin T. Hall. At the rear of these, Messrs. Harmsworth Brothers are about to build fresh premises, with a frontage in Tallis-street, for their newspaper business; the architect is Mr. Herbert Ellis.

BUILDING WORK IN WEST HAM DISTRICT.—A report by the Borough Engineer to the Corporation of West Ham shows that there is a remarkable activity in public works in that district. The following works have been in different stages of progress during the year:—lunatic asylum (in three contracts, amounting altogether to about 225,000*l.*); sewage pumping and electric lighting station (about 56,000*l.*); Dagenham Hospital (20,475*l.*); recreation ground in Hermit-road; paving streets (over 35,000*l.*); private street works (12,830*l.*). Plans have also been prepared for the following works, at the estimated cost given in each case:—artisans' dwellings (11,976*l.*); police-court extension (4,440*l.*); police cells (470*l.*); mortuaries, West Ham and Canning Town (1,580*l.*); fire brigade barracks, Canning Town (16,000*l.*); Town Hall extension (42,500*l.*); water scheme (28,560*l.*); northern and southern sewers (19,991*l.*); pitching various roads (18,759*l.*); and private street works, in addition to contracts given above, (9,413*l.*). The general expenditure, in addition to the above, through the Engineer's department, highways, sewers, &c., is about 53,400*l.*; while jobbing works, including artificial stonemaking, exceeded 16,000*l.* The total represents more than half a million (574,224*l.*) value of work either in execution or preparation.

LIBRARY, CEFN, CARMARTHEN.—This new building was opened recently at Cefn, in the High-street. The building is Gothic in style, and consists of a hall, reading-room, billiard-room, library, a games room, a committee-room, with other conveniences, and a living department for the caretaker. The architect is Mr. R. C. Jenkins, and the builder Mr. James Lloyd.

CUSTOM HOUSE, CARDIFF.—The new Custom House, at the Cardiff Docks, adjoins the offices of Messrs. Cory Brothers & Co., Limited, at the lower end of Bute-street. The front wall is of Portland stone, and the sides consist of glazed bricks, relieved with Portland stone dressings. The total depth of the building is 94 ft. The frontage to Bute-street is 40 ft. The staircases are of stone, with ornamental rails. The various offices are distributed as follows:—On the ground floor, chief preventive officer and surveyor's office, book-room, Queen's warehouse (for storing contraband goods seized), and boat watcher's room. On the second floor are the long room for general business, fitted with counters; collectors' room, test-room, and store-room. The top floor is reserved for the caretakers, and in the basement are the heating chambers. The whole building, which was erected by Messrs. William Thomas & Son, contractors, Cardiff, from plans drawn by Mr. Banner, Office of Works, London, cost 5,000*l.*

DRINKING FOUNTAIN AND CLOCK TOWER, EXETER.—The "Miles" Memorial Drinking Fountain and Clock Tower was inaugurated at Exeter on the 2nd inst. The design, which is a kind of combination of late Gothic form with some Renaissance detail, is carried out in Chudleigh limestone and red Corsehill. The lower portion of the tower is essentially a fountain, square in plan, with angle and flying buttresses. The four flying buttresses form also standards for lamps, and are surmounted by wrought iron frames and electric lamps. At the foot of each angle of the tower are carved groups of horses, suggested by the crest of the donor. On the north side is fixed the existing cattle trough, and on the south side another cattle trough, executed in granite. On the east is placed the fountain for wayfarers, also of granite, and on the west side is the door for access to the tower. Above the troughs on three sides are moulded recesses corresponding with the opening on the fourth for the door, with hood moulds, key

stones and cornices over, richly carved. Over the new trough is the bronze commemoration tablet, which bears the following inscription :—"Erected in the sixty-first year of the glorious reign of Victoria, Empress Queen, to perpetuate the beneficent work of William Miles, Esq., of this city, on behalf of the animal creation, by his widow, 1897," with two bulls in bronze at the base contending for the water issuing from the eject pipe. On the opposite side and surmounting the old trough Mr. Miles' coat of arms and his motto, "Ut Miles Obsta," has been carved in a large stone panel. Over the fountain for wayfarers is another carved panel with the text, "The fear of the Lord is a fountain of life," over ; and at the base is a griffin in bronze from which the water issues. The clock chamber, at the top of the tower, is square on plan, and projects somewhat beyond the face of the shaft. The clock faces, of which there are four, are 4 ft. 6 in. in diameter, and have projecting hoods. The clock chamber is surmounted by an octagonal cupola, in which will be fixed the bell upon which the clock strikes, and the whole terminates with a wrought iron and copper vane. The carving has been executed by Mr. F. Nelson, and the work generally has been carried out by Messrs. J. Easton & Son, of Exeter, from the design of Mr. T. A. Andrews, the architect.

THEATRE ROYAL, PRESTON.—The new Theatre Royal, at Preston, is built on the site of the old theatre in Fishergate, by Mr. W. Johnson, from the designs and under the personal superintendence of Mr. John S. Briggs, architect, of London. Mr. S. King Sheldon has acted throughout as clerk of the works, the general foreman being Mr. F. Coward. The following are the names of the principal firms engaged in the construction and fitting up of the theatre :—General contractor, Mr. Charles Walker, Preston; artistic decorations, Mr. Boekbinder, London, W. ; electric lighting, canopy, and fireproof curtain, Messrs. Vaughan & Brown, Limited, London ; hot water heating and hydrants, Messrs. Dilworth & Carr, Preston ; gas arrangements, Mr. John Edge, Preston ; steel constructional work, Messrs. Foster Bros. & Co., Preston ; general painting, plumbing, &c., Messrs. R. Park & Sons, Preston; tiling to pit walls, the Porcelaine Tile Co., Cobridge, Staffordshire ; ceramic work in vestibule, Messrs. Webb & Co., London ; marble dados, Mr. Wm. Hodgkinson, Preston ; stage machinery, ropes, &c., Messrs. Lyons & Co., London.

BOROUGH SANATORIUM, BRIGHTON.—The first portion of the new Borough Sanatorium at Brighton has just been opened. In 1894 plans were prepared by the Borough Surveyor, Mr. F. J. C. May, and subsequently the erection of a new administrative building, a ward pavilion, an isolation block, a discharge block, porter's lodge, and new disinfecting station, was commenced, the tender of Messrs. Peters & Son, Horsham, for 19,775*l.* being accepted. The buildings are of red brick, relieved by Portland stone dressings. The external walls are built hollow. The isolation pavilion contains one large ward, 28 ft. long by 24 ft. wide, five small wards, each 24 ft. long by 14 ft. wide, and three nurses' rooms, while in the scarlet fever pavilion there are two large wards, each 60 ft. by 26 ft., two small wards, 13 ft. square, and one nurses' room. The administrative block contains store-rooms, sitting-rooms for matron and staff, kitchen, bedrooms, &c., and apartments with separate entrance for the resident medical officer. A new disinfecting chamber has been erected in the rear of the administrative block, with two steam disinfecting apparatus. The ground works, roads, &c., were carried out by the Corporation workmen under the highway inspector, Mr. Grant, and Mr. J. Wright was clerk of the works.

THE COUNTY BUILDINGS, NORTHAMPTON.—At a recent meeting of the Northamptonshire County Council, the Building Committee recommended the adoption of plans prepared by Mr. Aston Webb for alterations and enlargements of the existing County Buildings at Northampton. By these plans such parts of the existing buildings as have any architectural or historical interest will not be altered, nor will the façade be touched except for the interchange of a doorway and window on the ground floor. The Courts will remain as they are and so will the walls of the main wing, which contains the Grand Jury room, but the modern buildings at the back between the main buildings and the County Council Chamber will be pulled down. The main entrance will be removed to the western extremity of the wing. The alterations will provide more rooms and offices, all more conveniently placed, and better accommodation will be given to the police department. The roughly estimated cost of the alterations will be 15,000*l.*, and the committee recommend that Messrs. Aston Webb and E. Ingress Bell be appointed architects for the erection of the buildings.—*Northampton Reporter.*

MUNICIPAL LODGING HOUSE, ABERDEEN.—The new Corporation lodging-house consists of three four-story blocks, the intermediate buildings being only one flat high. The architects, who were chosen in competition, are Messrs. Marshall & Dick, Newcastle-on-Tyne. The building has a frontage to East North-street (which has been widened about 10 ft. at the place) of 95 ft., is 112 ft. deep, and the height to the apex of the roof is 53 ft. 6 in. Access to the main corridor on the ground floor is gained by three steps. On the left hand on entering are the superintendent's house and office, behind this are the kitchen and dining-room, measuring together 40 ft. square. To the rear of this are boiler-house, disinfector, coal-store, covered ways, private washing-house, lodgers' washing-house, ironing-room, and foul-linen shoot. On the right of the main corridor on the ground floor is a combined reading and recreation-room, 42 ft. by 36 ft. The reading-room has a concrete roof and is lighted by a cupola. Behind this are bath and lavatory accommodation, boot-room, and clothes-changing room, with open yard, beyond which are seven porcelain urinals and a range of seven of Shanks' patent closets. In the background is a workshed for the lodgers. There is also a detached building for storing vendors' carts, barrows, &c., or barrel organs. There are 252 cubicles altogether—87 on first floor, 87 on second floor, and 78 on third floor, where there is also a sick-room. Each cubicle measures 6 ft. 9 in. long by 4 ft. 6 in. wide. On each floor there are two water closets with urinal combined, warder's bedroom, scullery, linen store, access to foul linen shoot, and access to lift for receiving clean linen. All the lavatories are tiled. The walls of the kitchen and dining-hall with scullery are also tiled. There is one of Kennedy's drinking fountains in each lavatory and one in each corridor at the different stair landings. There is also a heating coil at each stair landing. The staircases are of Arbroath stone, the corridors are paved with concrete, and there are two hydrants in each flat. The cubicles are of St. Petersburg red wood, and the internal finishings, doors, &c., are of yellow pine. The total cost will be about 13,000*l.* Mr. John Ogilvie has acted as Inspector for the Town Council, and the contractors are :—Mason, Leslie Smith ; carpenters, Leslie & Hay ; plasterers, J. Bannochie & Son ; plumber, A. B. Robertson ; painters and glaziers, G. Donald & Sons ; slater, G. Davidson, jun. ; electric light (all through the building), P. C. Middleton & Co. ; heating, R. Tindal ; lift, J. M. Henderson ; glazing, Mason & Son—all of Aberdeen.

HUNTER-STREET, BLOOMSBURY.—A block of residential flats is about to be built on the sites of Nos. 5 and 6. Hunter-street, and No. 8, Handel-street, Mr. A. Whitcombe being the architect. The contractors are Messrs. Perkins & Co., of No. 154, Great Titchfield-street, W.

BUILDING IN LEEDS.—The aspect of Briggate, the principal thoroughfare of Leeds, is about to be further improved. Some time ago the old commercial hotel, the "Bull and Mouth," and some adjoining property was purchased, and the estate is about to be developed by the City of Leeds Central Estates, Limited. To Briggate there will be a frontage of 120 ft., and to Kirkgate one of 121 ft. Backward from Briggate, the estate extends to within 40 ft. of New Market-street. The buildings upon the ground are very old, and at the rear consist of dilapidated cottages and sheds. The whole is to be swept away, and entirely new buildings erected. The promoters hope that in carrying out the scheme the Corporation will see their way to make a new street from Duncan-street to Kirkgate, 42 ft. wide—a continuation of the recently constructed thoroughfare known as Central-road. For this purpose no less than 1,900 yards of the ground is offered by the company, and negotiations with a sub-committee are now going on. This new thoroughfare, should an agreement be effected, will form an additional avenue to the markets. Plans of the new structures have already been prepared. The new buildings will comprise a hotel, a large emporium, and a number of shops and warehouses. The Briggate frontage will be in the French Renaissance style, and rise six stories. The main entrance to the hotel will be in Briggate. It will be approached through a colonnade 75 ft. long and 20 ft. wide. This will lead directly to a large central hall, 94 ft. long and 30 ft. wide, with a balcony running round the first floor level and a lantern roof. On the ground floor will be a buffet, 75 ft. by 25 ft. The ball-room will be 90 ft. long by 45 ft. wide, and 25 ft. high. In the basement will be situated a billiard saloon, 90 ft. by 45 ft., with six tables. The public bedrooms will number 130. The emporium will have a frontage to Briggate of 74 ft., an area of 95 ft. by 75 ft., and a large lantern roof. Four or five tiers of galleries will run round the interior. The basement will be constructed so that it can be flooded to a depth of 2 ft., and that gondolas may sail hither and thither. The establishment will be on the lines of Lewis's emporium in Liverpool. A promenade will overlook Briggate. The new shops and warehouses are to number twenty-one. Each will have a frontage of about 18 ft. At the rear the old Red Lion Hotel, now approached from Kirkgate, will be rebuilt. The architects are Messrs. J. Holmes Greaves & Co. of Leeds.—*Leeds Mercury.*

THE NEW THEATRE, NORWICH.—Tenders have been invited for pulling down the Norfolk Hotel and premises adjoining in St. Giles', preparatory to the work of building the New Theatre on the site. The architects are Messrs. Boardman, of Norwich.

ASYLUM EXTENSION, UPTON, NEAR CHESTER.—An addition to this building was opened on the 31st ult. The new wing, in addition to an administrative block for the whole institution and another block for attendants, affords accommodation for over 400 additional patients. The architects were Messrs. Grayson & Ould, of Liverpool, and the builders Messrs. Jones & Sons, of Liverpool. The buildings are faced with Edwards's Ruabon bricks. The warming and ventilation is on the plenum system, and the work has been carried out by Messrs. Ashwell & Nesbit, of London. The electric plant and lighting has been supplied by the Liverpool Gas and Electric Fittings Company. Messrs. Cochrane, of Liverpool, have fitted up the kitchen ranges and the steam cooking apparatus. Messrs. Doulton & Co. have supplied the sanitary fittings, and the Chester Waterworks Company have put in the fire hydrants. Mr. J. Beveridge acted as clerk of the works.

LIBERAL CLUB, BIRKENHEAD.—The new Town Liberal Club, Claughton-road, Birkenhead, has just been opened. The elevation of the building in Claughton-road is faced with red Ruabon bricks from the works of Mr. J. C. Edwards, Ruabon. The principal entrance from Claughton-road opens into a hall, 15 ft. by 12 ft., the floor of which is laid with encaustic tiling, by Mr. Geo. Swift, of Liverpool. On the right are the secretary's office, the principal staircase, and the refreshment bar ; on the left is the reading-room, 17 ft. by 13 ft., and at the end the billiard-room, 40 ft. by 25 ft. Beyond the billiard-room are situated the gentlemen's toilet-room, the committee-room (with separate entrance from Greenfield-street), and a secondary staircase giving access to the green rooms, &c. A mezzanine floor contains a ladies' toilet-room and a cooking kitchen. The entire first floor is occupied by the lecture hall, with its stage and two green-rooms. The lecture hall is capable of accommodating about 400 persons. The stage is 20 ft. by 12 ft., and the green-rooms communicate directly with the hall and with the secondary staircase, and are provided with fireproof floors. From the lecture hall access can be obtained to a small balcony. Adjoining the club premises, and communicating with the same at the rear, is a residence for the keeper. The buildings have been erected from the designs of Mr. Thomas Cook, architect, of Liverpool, the contractor being Mr. Peter Rothwell, of Birkenhead, and the sub-contractors as follow : masonry, Mr. W. H. Grice ; plumbing, Mr. Robt. Robinson ; slating and plastering, Messrs. Henry Johnson & Sons ; glazing, Messrs. Lackland & Co. The premises are fitted throughout with the electric light by Messrs. New & Bird ; heating apparatus by Messrs. J. R. Cooper & Sons ; ventilation by Messrs. John Gibbs & Son. Communication between the lecture hall, the cooking kitchen, and the refreshment bar is obtained by lifts.

FREE LIBRARY, PLASHET, EAST HAM.—The foundation stone of a free library was laid at Plashet on the 6th inst. Mr. Silvanus Trevail, of London and Truro, is the architect.

PUBLIC LIBRARY, ST. GEORGE'S-IN-THE-EAST.—A new public library has just been opened at St. George's-in-the-East. The site has a frontage of 49 ft. to Cable-street, and a depth of 96 ft. The builders were Messrs. W. Johnson & Co., of Wandsworth, and the architect was Mr. Maurice B. Adams, of Chiswick.

LIBERAL CLUB, NORTHAMPTON.—On the 7th inst. the Marquis of Northampton opened the new Northampton Town and County Liberal and Radical Club in St. Giles'-street, Northampton. The frontage to St. Giles'-street is given up on the ground floor to three lock-up shops, above which is an assembly hall. The exterior of the building is of red bricks with yellow Weldon stone facings to openings and gables. The roofs are covered with Penrhyn green slates ; and the dome on the tower, at the angle of the two frontages, is covered with lead. On the ground floor are the entrance and staircase halls and corridors, a reception-room, a dining-room, a library, buffet, &c. The halls are provided with panelled dados, with Fawkes' enriched mouldings. The first floor is reached by a stone staircase, lighted by the window which is a feature of the Castilian-street front. The reception-room is on the left of the entrance. The room is lighted by three stained glass windows. The dining hall is in communication with the refreshment buffet. The library and the buffet look on to Castilian-streeet. On the first floor, at the head of the main stairs, is the entrance to the assembly hall : the hall is capable of seating 250 people. It is provided with a platform and stage entrance and retiring-rooms. There is an extra stair at the end running direct from the hall to St. Giles'-street. Off the main landing is a card-room, and at the end a billiard-room and an annexe for conversation, cards, &c. The upper story of the tower is utilised for an additional card and smoke room. The apartments for the caretaker are at the rear. The rapid fall in the level of Castilian-street has been taken advantage of by the architects in forming half-basements for lavatories and cellarage, and for the heating apparatus. All the corridors and halls are heated by American low-pressure radiators. The contractors were Messrs. Wilson & Alright, of Northampton, and the work has been carried out under the personal supervision of the architects, Messrs. Mosley & Anderson, of Northampton.

ELECTRIC LIGHT AT LLANDUDNO.—At Llandudno, on the 5th inst., a system of electric lighting for the town was switched on for the first time. Mr. A. H. Preece was the electrical engineer, and the scheme has been carried out at an outlay of 25,000*l.*

SANITARY AND ENGINEERING NEWS.

SEWAGE SCHEME, SHREWSBURY.—The ceremony of laying the foundation-stone of the new pumping station in connexion with the scheme for the disposal of the sewage of Shrewsbury took place on the 28th ult. Messrs. John Taylor, Sons, & Santo Crimp are the engineers; and Mr. Henry Price is the contractor.

ENLARGEMENT OF THE WATER WORKS, PORT GLASGOW.—On the 29th ult. the last copestone was laid at the filters constructed at Partshill. The new works, which were designed by Mr. James Wilson, C.E., Edinburgh, and cost 4,000*l.*, are in close proximity to the filters and pure-water tank, which had proved inadequate for the increased and growing requirements of the burgh and district. The contractors were Messrs. D. Cunningham & Sons, Kilbarchan.

BRIDGE, SOUTHWOLD.—The new bridge over the river Blyth, Southwold, was opened on the 31st ult. The bridge has brick abutments and retaining walls, the superstructure being formed of steel trough girders. The parapets over the span are of wrought-iron lattice work; the width across the bridge is 26 ft., and the waterway 20 ft. There are brick piers at each end, the approaches being fenced with cast-iron standards and wrought-iron rails. The plans were prepared by Mr. Henry Miller, the County Surveyor.

WATERWORKS, BEDWORTH.—On the 5th inst. the foundation stones were laid of the water tower in connexion with Bedworth waterworks. The works have been entrusted to Mr. Amos Jenkins (Southwell), at a cost of 9,700*l.* Mr. H. B. Nichols (Birmingham) is the engineer to the scheme.

KEW BRIDGE.—The Surrey County Council at their quarterly meeting on the 8th inst. considered a report from the joint committee of Surrey and Middlesex similar in terms to that presented to the Middlesex Council on the previous day, stating that, after careful reconsideration, the committee were unable to recommend any further reduction in the revised estimate of 149,000*l.* as the contract price for the rebuilding of Kew Bridge, and they repeated their recommendation that an Act should be obtained for fresh borrowing powers. Mr. J. Lawrence moved an amendment to refer the matter back to the committee, but this proposal was rejected, and the recommendations to seal the contract and proceed with the Bill were adopted.

STAINED GLASS AND DECORATION.

WINDOW, CHRIST CHURCH, BELPER. — On the 30th ult. the stained glass window recently erected to the memory of the late Vicar of Christ Church, Belper, the Rev. E. A. Hillyard, was unveiled. The new window, erected by Mr. Kempe, is at the east end of the south wall. The window represents the martyred St. Laurence.

NEW WINDOW, SUNDERLAND.—A large stained glass window has just been placed in St. John's Wesleyan Church, Sunderland, containing subjects on the Nativity, the Baptism, Christ as the Good Shepherd, Bearing the Cross, and the Three Maries at the Tomb. Under these are smaller subjects; the whole being surrounded by suitable canopy work. The window is from the studio of Messrs. Powell Brothers, of Leeds.

DECORATION OF ST. PAUL'S CATHEDRAL.—Sir William Richmond's scheme of mosaic decoration, St. Paul's Cathedral, was further developed to the public last Saturday, when one of the concave spaces over the lectern was unveiled. It represents Christ reigning from the Tree, the world being represented by a field of wheat ready for the harvest, through which flows the River of Life.

WINDOW, SCOTFORTH PARISH CHURCH, LANCASHIRE.—At Scotforth Parish Church on the 3rd inst., a stained-glass window to the memory of the late Thomas and Julia Ripley was unveiled and dedicated. The work has been carried out by Messrs. A. Seward & Co. The window, which has been placed at the west end of the church, consists of three lights, the subject chosen typifying Charity.

FOREIGN.

FRANCE.—The scaffoldings are being erected in the Panthéon in preparation for putting up the paintings of Puvis de Chavannes. The public are not to be permitted, however, to see them until the borders, which were left unfinished, have been completed by one of his pupils.——The Municipal Council are discussing a proposition for erecting a monument to the memory of Puvis de Chavannes in the Monceau quarter, where he died; and his name has been given to a street in Paris. ——M. Ferdinand Humbert, painter, has been elected Professor in the Ecole des Beaux-Arts in place of the late M. Lenepveu.——M. Rodin, the sculptor, has been commissioned to execute a monument in honour of the poet, Charles Baudelaire.—— The monument to Chopin, erected by subscription, is shortly to be placed in the Parc Monceau. It was at first entrusted to M. Froment-Maurice, but has been actually carried out by M. Henri Dubois. ——A large fresco measuring eighty superficial mètres has just been inaugurated in the Chapelle des Catéchisms at Montmartre. It is executed by MM. Paul Sieffert and Henri Rousseau. ——Barye's sculpture of "Le Lion au Serpent," and Carpeaux's group representing "Ugolin et ses Enfants," are to be removed from the Jardin des Tuileries and placed in the Louvre.——Important works are being undertaken for the restoration of the old and curious church of Villeneuve-Saint-Georges, built in the thirteenth century by the Abbots of Saint Germain des Près, and partially rebuilt in the Renaissance period.—— The tenth annual Fine Art Exhibition at Nantes will open on January 21 next, and close on March 5. ——M. Lachenal's exhibition of "peintures, sculptures, ceramiques, et grés flammés," has opened in the Georges Petit gallery, and will remain open till November 30.——The death of M. A. Lievrè at the age of seventy is announced. He was keeper of the Municipal Library of Poitiers, and the author of several remarkable archæological works on Poitou and the two Charentes.——The death is also announced at the age of 48, of M. Marry-de-la-Chesnraye, an architectural "expert" in Paris.——Only a month after the death of Charles Garnier, his son Christian also died. Only a few days ago the Institute of France awarded the Prix Volney in his honour, for a learned study to which the young man had devoted the closing years of his life.

MISCELLANEOUS.

VOLUNTEER MEMORIAL, EXETER. — At the annual distribution of prizes at the Drill Hall, Bedford Circus, Exeter, of the 1st R.V. on the 2nd inst., a presentation to the building was made. It consisted of a replica of the portrait bust in the Volunteer memorial on Northernhay, in front of the historic Castle of Exeter. It is of terra-cotta, of heroic size. It is the work of Mr. H. Turner Hems, of Exeter.

WESTMINSTER IMPROVEMENTS.—At the Surveyors' Institution, Savoy-street, on the 3rd inst., Mr. Arthur Cates, sitting as umpire, had before him a case in which Messrs. Lewin, Gregory, & Anderson, Parliamentary agents and solicitors, claimed 4,643*l.* as compensation from the Crown for "disturbance of business" and leaseholds on their premises, Nos. 11 and 13, King-street, Whitehall, which are coming down under the Westminster Sites Improvement Act. Mr. Freeman represented the claimants, and the Solicitor-General, Sir Robert Finlay, appeared for the Crown. In his opening statement Mr. Freeman said that under the Improvements Act the tenants had been given notice to quit, and had acquired premises in Broad Sanctuary. Though the new premises were larger, their situation was by no means so good, in spite of the fact that the rent was 450*l.*—250*l.* more than the rent of the old place. Cost of removal, "disturbance of business," and so on, would, counsel held, bring the amount of compensation to 4,643*l.* Evidence in support of this having been called, the Solicitor-General held that the sum claimed for probable loss of business was absurd in the case of a firm so well known and so long established. The umpire should allow nothing whatever for this, though, of course, something should be allowed for cost of removal and repairs. The umpire reserved his award.

SPEN VALLEY BUILDERS' ASSOCIATION.—On the 31st ult. the fifth annual dinner of The Spen Valley and Heavy Woollen District Contractors' and Builders' Association was held at the Black Bull Hotel, Mirfield. Mr. James Townsley (Vice-chairman of the Hull Master Builders' Association), in proposing the toast of the Association, said if they asked him for a motto he should have to modify the old one, "Do unto others as you would have them do unto you," and substitute "Do unto others as they do unto you," because those forces which were federated were reaping from them the benefits of their united efforts, and it was essential that they should be organised in self-defence. Contractors were often subjected by architects to arbitrary agreements, and this was an evil which could be uprooted by combination alone. Another difficulty they had to contend with was that of the incompetent clerk of works, who watched the contractor's every movement, harassed him with unreasonable requests, and this could only be altered by thorough organisation. Between the proprietor, the architect, and the clerk of works the question arose, "Whom did the contractor work for?" He had three masters, and in combination lay their only redress for the iniquitous wrongs they suffered. Perhaps their ancestors were in some measure responsible for the existence of the clerk of works, and the trade, he contended, should, by avoiding bad workmanship, cultivate a desire for better work, and render the office of "clerk of works" altogether unnecessary. The more they, as contractors, rubbed shoulders together, and the readier they exchanged ideas, the better. Some might contend that each contractor should tender openly, but they were entitled to fair and legitimate remuneration for the work they undertook. He did not think that the workmen were their worst enemies. Believing in the principles they believed in, workmen were combined, and were a power to be reckoned with; and he hoped the time would yet come when there would be an affiliation of masters and men—not on the part of the master by a peace-at-any-price concession, but, under proper conditions, affiliations of masters and men would, he believed, result in benefit to both. Mr. W. R. Thompson, President of the Association, responded to the toast.

PUBLIC IMPROVEMENTS, NEW FERRY.—On the 2nd inst., at the Public Offices, New Ferry, Colonel W. R. Slacke, R.E., held an inquiry on behalf of the Local Government Board respecting an application by the Lower Bebington District Council to borrow 10,000*l.* for a sewerage scheme, 5,000*l.* for new public offices, and 3,000*l.* for recreation grounds. Mr. T. Sproat (law clerk) stated that the sewerage scheme was that of taking all the drainage of the district direct to the Mersey, instead of discharging a large portion of it into Bromborough Pool as at present. The scheme selected was that of Messrs. Beloe & Priest, and provided for a population of 28,000. Messrs. Beloe & Priest explained the scheme.

FIRE STATIONS AND MARKET EXTENSION, LIVERPOOL.—On the 2nd inst., Colonel C. H. Luard, C.E., held at the Municipal Buildings, Dale-street, Liverpool, an inquiry on behalf of the Local Government Board into applications by the City Council with respect (1) to an increase of fire brigade stations, and (2) to the extension of the North Haymarket. Mr. Pierce, in reference to fire stations, said three new stations were still required to make efficient the protection of the extended city from fire. Power was now sought to borrow 12,000*l.* in order to purchase three sites, namely, in Boundary-street, Kirkdale, for the north end and docks, 5,000*l.*; in Grafton-street, Toxteth Park, for the south end of the docks, 4,000*l.*; and in Harper-street, Kensington, adjacent to the Prescot-street Police Station, 2,050*l.*, for a central area. Mr. T. Shelmerdine (City Surveyor) gave evidence as to the value and suitability of the sites.

COLLAPSE OF A BUILDING, NEWCASTLE-ON-TYNE.—A beerhouse at Byker Buildings, Newcastle-on-Tyne, which was undergoing alterations, collapsed on the 2nd inst., while the bricklayers and labourers were at work. All the men, however, succeeded in escaping, with the exception of a labourer named Matthew Fitzgerald, who was caught by the falling roof and killed.

APPOINTMENT.—Mr. Murdoch Macdonald, C.E., who was Resident Engineer on the Black Isle Railway in Ross-shire, and was recently in charge of doubling the Highway Railway at Blair Atholl, has been appointed Principal Assistant Engineer in charge of the great barrage works on the Nile at Assouan, which are being carried out by Sir Benjamin Baker, as Engineer-in-Chief to the Egyptian Government.—*Scotsman.*

A NEW USE FOR PRISM GLASS.—At St. Saviour's, Southwark, an important new application was made of Messrs. Hayward & Eckstein's "Luxfer" prism glass, by using it to bring daylight to the exterior of a stained-glass window. This was the window by Mr. Kempe in the north transept, the interior effect of which was destroyed by the shutting out of the light by adjacent buildings; and it appears, on Mr. Kempe's own testimony, that the placing of the prisms outside the window has given it all the effect of a window exposed to full daylight. This may be a useful point to bear in mind in other cases of stained windows in ill-lighted positions.

PUBLIC IMPROVEMENTS, HULL.—An inquiry was held at the Hull Town Hall on the 1st inst. as to the application from the Corporation for permission to borrow 120,150*l.* for new streets and improvements, 26,000*l.* for electric lighting, 6,774*l.* for the site of a central Public Library, and 4,103*l.* for a refuse destructor. Mr. R. H. Bucknell, Local Government Inspector, conducted the inquiry. Evidence was given by the City Engineer (Mr. A. E. White) and others.

ELECTRIC-LIGHT SCHEME, CHELTENHAM.—An inquiry was held on the 4th inst. by Lieutenant-Colonel A. E. Smith, R.E., Inspector under the Local Government Board, into an application by the Town Council for sanction to a loan of 17,200*l.* for the purposes of electric lighting. The Town Clerk stated that the amount borrowed up to date was 68,152*l.* In consequence of the demand for the light further extensions were necessary, hence the present application. Mr. Hamilton Kilgour, Borough Electrician, gave other particulars, and there being no opposition, the inquiry closed.

SOCIETY OF ARTS —The opening address of the Society's session will be delivered on Wednesday, November 16, by Sir John Wolfe Barry, K.C.B., LL.D., F.R.S., the Chairman of the Society's Council. The topic which the Chairman proposes to deal with in his address is "The Internal Traffic of London."

PROFESSOR LEWES ON FIREPROOF BUILDINGS. —On Tuesday last Professor Vivian B. Lewes delivered a lecture in the London Institution upon "Fire and Fire Extinction," the chair being occupied by Sir Frederick Dixon-Hartland, M.P. The lecture consisted mainly of a popular discourse, well illustrated by experiments, upon the chemistry of combustion. Reference was, however, made to one or two matters of practical interest to builders. In modern buildings, said Professor Lewes, there is a tendency to construct the front very largely of glass, and the floors and ceilings of fireproof materials. One of the first results of a conflagration of goods or furniture in buildings of this description was the destruction by heat of the large panes of glass, thus giving the ignited materials a

copious supply of air, converting the rooms into furnaces, and causing huge tongues of flame to burst out of the capacious windows. These flames were often of such dimensions that they licked the face of the buildings on the opposite side of the road, and meeting with more large glass windows, caused them to break, and thus the flames gained contact with the inflammable contents of the buildings. It is possible, added Professor Lewes, to obtain sufficient light and air without employing such an extremely large window area; and in a building with less window surface the inrush of air through broken windows would be limited, and the dimensions and fierceness of the flames be proportionately reduced. Professor Lewes advocated the provision of light steel shutters to large windows for use when fire occurred, although he stated that he was quite aware that many people would ridicule the suggestion, and say that it was impracticable, and that the windows were wanted for the escape of inmates and for the inlet of water from the fire hoses. He thought, however, that if the matter were seriously considered a simple method of closing the shutters from the outside could be devised, and that the exclusion of air in this manner would be found in certain cases to be of great value in checking the progress of a fire. Professor Lewes was warmly applauded by the firemen and others present when he deprecated the use of stone staircases, and said that a good oak or teak staircase, painted on the surface with some fireproof solution or paint, was less rapidly destroyed in a fire than a staircase of stone.

KING'S COLLEGE, PLUMBERS' EXAMINATION.—An examination of master and operative plumbers applying for registration under the National Registration of Plumbers was held on Saturday by the Worshipful Company of Plumbers at King's College. Twenty-one candidates presented themselves for examination from various parts of London, also from Cambridge, Carmarthen, Guildford, Maidstone, Ramsgate, Windsor, and Worthing. The tests in workmanship included lead bossing, pipe bending, and joint making, and the examination questions included the subjects of roof covering, contamination of drinking water from faulty connexions, arrangement of bath, sink, and closet wastes, drainage of town houses, and disconnexion with sewers. The examiners were:—Mr. Charles Hudson, chairman of the board of examiners; Mr. W. H. Webb, master plumber; Mr. George Taylor, foreman plumber; and Messrs. W. Curtis and J. Johnson, operative plumbers. Nine succeeded in passing the examination in practical workmanship.

QUATUOR CORONATI LODGE OF FREEMASONS.—On Tuesday last, the 8th inst., Mr. C. Purdon Clarke, C.I.E., Fellow of the Institute of Architects, Director of the Art Museum, South Kensington, was installed as Master of the Quatuor Coronati Lodge, No. 2,076, in succession to Mr. S. T. Klein. Among the new officers for the year are Mr. E. S. Castle, Q.C., Vice-Admiral A. H. Markham, and the Rev. J. W. Horsley. The lodge, which takes its name from the legendary saints of the building trades, whose festival occurs on November 8, was established in 1884 for the prosecution of masonic research. Sir Charles Warren was the first Master, and Sir Walter Besant the first (and only) treasurer. There are upwards of 2,700 subscribers to its printed "Transactions." Mr. C. Purdon Clarke is the second architect who has been elected to the chair, the first having been Professor T. Hayter Lewis, who was the Master in 1891. The membership of the lodge is restricted to persons who possess either a literary or an artistic qualification.

WATER PIPES FOR GLASGOW, AND AMERICAN COMPETITION.—The end of the Glasgow water pipes contract difficulty has not yet arrived. The contract, it will be remembered, was divided between a Philadelphia firm and Messrs. Maclaren, of Glasgow, and on the local firm refusing to accept this condition the whole contract was given to the Americans. At a meeting of the Water Committee on the 7th inst. it was reported that pipes were not being received as required, and it was decided to take what was necessary from Messrs. Maclaren, and intimate to the American firm that they would be held responsible for any difference in price paid for pipes while their contract remained unfulfilled.—*Glasgow Evening News.*

CAPITAL AND LABOUR.

LEEDS BRICKLAYERS AND THEIR WAGES.—The Leeds bricklayers have served the masters with a notice which will expire six months hence, demanding 1d. per hour advance of wages (the present rate being 9d. per hour), and also an alteration of the rule regarding apprentices. The labourers are not affected by the demand. The masters have issued a counter notice to reduce the wages ½d. per hour, and also that the rule regarding apprentices shall not be interfered with. As the notice does not expire until the beginning of June next, it is not anticipated that the Masters' Federation will take any decisive action for some little time yet.

BUILDING TRADES OF BOSTON.—On the 3rd inst. the master bricklayers and builders in Boston received notice from the men demanding an advance from 6d. to 7½d. per hour.

LEGAL.

THE COUNTY COUNCIL AND TEMPORARY STRUCTURES.

AT the Lambeth Police-court, on the 3rd inst., Mr. G. J. Brown, of the "Walmer Castle," Peckham-road, appeared to answer two summonses taken out by the London County Council, one for setting up a wooden structure without having first obtained a licence from the Council, and the other for retaining the structure.—Mr. T. Chilvers, from the solicitors' department of the Council, appeared in support of the summonses, and said the defendant was the proprietor of the "Walmer Castle." He proposed to carry out certain alterations to his premises. They were commenced, and he then erected on his forecourt a wooden structure for the purpose of carrying on his business. After it had been set up an application was made to the Council for a licence, but the Council refused to grant one. Notwithstanding that, the structure was kept up.—Mr. Brown, the defendant, said he acted under the advice of his architect in the matter, and had no idea that he was doing wrong. There was now an amended application before the Council for the erection of another shanty during the time the house was being completed.—Mr. Chilvers said he must ask for a penalty upon the summonses. The Court had power to make an order for the demolition of the structure, but he would not ask for that upon that occasion.—Mr. Hopkins ordered the defendant to pay a penalty of 20s. upon each of the two summonses, and also directed him to pay one guinea costs.—*Morning Advertiser.*

WHAT IS A STREET?

ON Monday, at the Highgate Police-court, Mr A. W. Armstrong, of Broadhurst-gardens, West Hampstead, was charged on a summons taken out by the London County Council with having commenced to form and lay out a street for carriage traffic without having first obtained the sanction of the Council. Mr. Horace Avory represented the County Council, and Mr. Cunningham Glen appeared for Mr. Armstrong.

Mr. Avory said that for the purposes of this prosecution the persons laying out a street were deemed to have "commenced" to do so when they began to lay the kerb, &c. Mr. Glen said that he would admit that the formation had been "commenced." Mr. Avory said that the "street" in question had been commenced on the Cleveland estate between the Highgate-road and Parliament Hill Fields. It did not afford any communication with another street on the side furthest from Highgate-road, but was practically a square, with a gate at the private entrance in Highgate-road. The Council had refused to sanction a similar scheme, but Mr. Armstrong was now proceeding without the permission of the Council. The road was 750 ft. in length, and it was proposed to put up twenty blocks of buildings abutting on the street. The estate was 4 acres in extent. Mr. Glen submitted that this was not a "street," but was in the nature of a "court," and would not become a "street" until the entrance gates were removed. The Bench convicted the defendant, and fined him 20s. and 5*l.* 5s. costs. Notice of appeal was given.—*Daily Graphic.*

MEETINGS.

FRIDAY, NOVEMBER 11.

Architectural Association.—Mr. H. Wilson on "Arts and Crafts." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Professor Roger Smith on "Sanitary Building Construction." 8 p.m.

SATURDAY, NOVEMBER 12.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Richmond Main Drainage Works, Mortlake. 3 p.m.

Institution of Junior Engineers.—Visit to the King William-street Station of the City and South London Railway extension works. 3 p.m.

MONDAY, NOVEMBER 14.

Surveyors' Institution.—First Ordinary General Meeting of Session 1898-99. The President, Mr. Robert Vigers, will deliver an Opening Address. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. G. Reid on "Sanitary Appliances." 8 p.m.

TUESDAY, NOVEMBER 15.

Institution of Civil Engineers.—Mr. W. Beedie Esson on "Electrical Transmission of Power in Mining." 8 p.m.

Northampton Institute, Clerkenwell (Lectures on Architecture).—Mr. F. Bond on "Perpendicular and Tudor." 8 p.m.

Sheffield Society of Architects and Surveyors.—Mr. T. Swaffield Brown (Master of the Arts and Crafts Guild) on "Ecclesiastical and Art Metal Work." 8 p.m.

WEDNESDAY, NOVEMBER 16.

British Archæological Association.—(1) Mr. Alfred C. Fryer, Ph.D., M.A., on "Wool Church, Dorset"; (2) Mr. C. H. Compton on "The Welsh Marches." 8 p.m.

Society of Arts.—Opening meeting of Session. Address by the Chairman of the Council, Sir John Wolfe Barry. 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—(1) Inspection in the Parish of St. George's, Hanover-square, 2 p.m.; (2) Mr. J. Wright Clarke on "Details of Plumbers' Work." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Northern Architectural Association.—Inaugural Address by the President, Mr. Frank W. Rich. 7.30 p.m.

Edinburgh Architectural Society.—8 p.m.

Liverpool Engineering Society.—8 p.m.

FRIDAY, NOVEMBER 18.

Institution of Civil Engineers (Students' Meeting).—Mr. C. Lightfoot on "The Production of Liquid Air, and its Application to Chemical and Other Industries." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. W. C. Tyndale on "House Drainage." 8 p.m.

Glasgow and West of Scotland Technical College: Architectural Craftsman's Society.—Mr. James L. Little on "Conditions which Render Houses Unhealthy." 8 p.m.

Dundee Institute of Architecture, Science, and Art.—Dinner, Grand Hall of the Royal Hotel, Union-street. 6 p.m.

SATURDAY, NOVEMBER 19.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Harrison & Barker's Knacker Yard, Winthrop-street, Whitechapel. 3 p.m.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until December 19.

[1897] 23,232.—JOINT-MAKING PACKING: *A. S. Morrison.*—A piece of fabric, coated on its side with a lubricating composition, is rolled up with the composition inside until it takes the shape of a cord or band; the free edge is then temporarily fixed by gold size or any other adhesive substance.

23,565.—SOLDERING LAMPS: *M. Eulner.*—A hollow brass cylinder contains a wick which easily absorbs spirits, the tube is closed at top and bottom; to its lower end is soldered another tube for a handle socket, on the exterior cylindrical side of the large cylinder is soldered a third tube containing a spirit-wick, having its lower end closed and its upper end open; the blowing action is automatically obtained by the escape into the flame, of gas through an aperture in the cylinder owing to the heating of the spirit therein by the flame issuing from the third tube.

26,616.—BALL VALVE FOR CISTERNS, BOILERS, AND OTHER PURPOSES: *W. Errington.*—The chamber which carries the ball has an indiarubber seating to form a tight joint between the seat and the ball; the latter is raised by a lever whereof one end engages upon the ball's under side, and the other end is operated as may be required. The lever may pass through the pipe or tube, in which case the joint may be rendered tight with packing. It is claimed that the contrivance readily affords a supply of water, and that upon release of the lever the supply is at once stopped, owing to the weight of the water above forcing the ball into its seating, the ball's own weight aiding that operation.

27,261.—COVERS, CAPS, AND LIDS FOR CLOSING THE ENTRANCES OF GAS, SEWER, TELEPHONE, AND ELECTRICAL SUPPLY SHAFTS AND HOLES, GULLIES, &C.: *J. Price & J. Johnson.*—To facilitate their lifting for legitimate purposes, and to prevent such lifting under other circumstances, the inventors provide the lids, covers, &c., with an automatically locking device, which consists of a loosely jointed arm or latch attached to the hinged part so as to hang down from its under side when closed, and which has a hook-shaped part or catch, having a curved face, a lifting-piece upon it, and a stop or shoulder, and a lug upon the frame part of the cover, to and upon which the hinged part is jointed and carried. The jointed arm is adapted to engage the stop by its hook-shaped part or catch, and to work upon the abutment or lug through its lifting-piece or projection, so as to hold the hinged part of the frame at one time and to disengage it and give it an initial lift at another.

27,727.—BRIDGES OR BRACKETS FOR SUPPORTING LEVERS IN FLUSHING CISTERNS, &C.: *T. & J. B. Claughton.*—The bridge has lugs or other suitable portions at both ends for attachment to the cistern walls, the lever for operating the discharge mechanism is mounted on a stud carried in bearings situated on the bridge's outside in such a manner that when it is required to remove the lever or other working portions of the apparatus for repairs, the stud may be withdrawn from its bearings and the parts released without disturbance of the bridge; the length of the lever's stroke is regulated by stops placed upon the bridge, and set screws may be employed on the stops to adjust the amount of stroke, or the screws may be placed on the lever instead of on the stops.

28,110.—IGNITION OF GAS BY ITS OWN ACTION: *H. Schimmel.*—Using an igniter of the well-known kind—*e.g.*, that of Duke's patent 969, 1895—consisting of an igniting body which contains platinum black connected by a simple wire of platinum, the inventor treats the igniting wire with a solution of a salt of platinum or chloride of platinum, in such a way that one or two drops adhere to the wire near the igniting body, the solution adhering to the wire will evaporate and the remaining salt will be reduced to platinum in the form of platinum sponge fixed on the igniting wire or refractory thread: "the inventor takes advantage of the fact that platinum and other substances used for preparing self-igniters grow hot by their own action even in a stream of gas of a very low temperature, when they are in a very finely divided form, named platinum black or platinum mohr, whilst platinum of a less finely divided form, named platinum sponge, heats itself only in a stream of warmed gas or when the platinum sponge is warmed itself."

28,629.—WINDOW SASHES: *E. Duval.*—These (*a*) comprise an outer casing having inner pivots projecting from their sides, double-grooved pulleys to revolve on the pivots, an upper and lower sash with inner recessed edges passing the pulleys, with side stops and guides for the sashes; (*b*) consist of outer and inner casings, having projecting pivotal centres, with grooved pulleys therein; and (*c*) consist of adjustable and swinging sashes, having vertically recessed side edges for movement over grooved pulleys pivoted to the inner side of an outer frame or casing, an inner side casing between the pulleys and the sides of the outer frame, with cables attached to the ends of the sashes.

29,020.—CONSTRUCTION OF BRICKS AND OTHER MOULDED BUILDING MATERIALS: *F. S. Smith.*—Each brick is tongued or grooved so that in cross section its under side is grooved or hollowed, and its top side is tongued or has a projection, the tongue of the underneath brick fitting into the groove of the upper brick.

29,263.—FIRE-BRICKS, SLABS, OR TILES: *C. Hannay, director of the Caribbee Manufacturing Co.*—These are

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised	Premiums.	Designs to be delivered.
*Public Library	Hull Corp.	50*l*. 30*l*. 20*l*.	Jan. 1,'99
*Fire Brigade Station	Bradford Corp.	100*l*. 50*l*. and 30*l*.	Jan. 2

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Fish Market and Offices, The Hayes	Cardiff Corp.	W. Harpur, C.E. Town Hall, Cardiff	Nov. 15
Stabling, &c. Gordon-street Dye Works, Bradford	Murgatroyd & Lister	J. Robertshaw & Son, Archt. 55, Tyrrel-street, Bradford	do.
*Surface Water Drainage	Bromley U.D.C.	Surveyor, Council Offices	do.
*Kerbing, Tar Paving, &c.	Lewisham Board of Works	Sur. Dept. Board's Offices, Catford, S.E.	do.
House, Selby, Yorks.	N. E. Ry. Co.	W. Bell, Archt. N. E. Station, York	Nov. 16
Boundary Walls, &c.	Burtonwood (Lancs.) Parish Council	William & Segar Owen, Archt. Warrington	do.
Alterations at Victoria Rooms	Budlington U.D.C.	C. Gray, Council's Offices, Budlington	do.
Factory, Foyle-road, Londonderry		D. Conroy, Archt.2, Bishop-street, Derry	do.
Painting, &c. Holbrook (Suffolk) Schools		E. F. Bisshop, Archt. 32, Museum-street, Ipswich	do.
Hospital, Knutsford	Bucklow Union	R. J. M'Beath, Archt. Birnam House, Sale	do.
Painting, &c. Offices	Cardiff Corp.	W. Harpur, C.E. Town Hall, Cardiff	do.
Villa, Botham Hall-road, Longwood, near Huddersfield		J. Berry, Archt. 9, Queen-street, Hudderafield	do.
*Making-up and Paving Road	Fulham Vestry	C. Botterill, Town Hall, Walham Green, S.W.	do.
*Fever Hospital at Workhouse	Bucklow Union	R. J. McBeath, Birnain House, Sale	do.
Additions to Schools	Monk Bretton Sch. Bd.	Wade & Turner, Archt. 10, Pitt-st. Barnsley	Nov. 17
Four Houses, Fairfield-road, Morecambe		J. Hartley, Archt. Morecambe	do.
Additions to Warehouse, Strathmill Distillery, Keith		C. C. Doig, Archt. Elgin	do.
Lavatories, &c Market-place	Ripon Corp.	City Surv. Town Hall	do.
Additions to Schools, Barrasford		Armstrong & Knowles, Archt. 38, Grainger-st. West, Newcastle-on-Tyne	Nov. 18
Block of Buildings, Lossiewynd	LadyGordon Cumming	A. & W. Reid & Willet, Archt. Elgin	do.
Public Hall, Pitlochry, N.B.		J. Bruce & Son, Archt. Dundee	do.
Cottage, Portland-road, Kingston-upon-Thames		V. Davison, C.E. New Malden	Nov. 19
Hospital, Lancaster Marsh Estate	Lancaster Corp.	Borough Surv. Town Hall	do.
Chapel, Armley, Leeds		W. Hanstock & Son, Archt. Branch-road, Batley	do.
*Wood Blocks	Camberwell Vestry	W. Oxtoby, Vestry Hall, Camberwell, S.E.	Nov. 21

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Concrete Sea Wall and Esplanade	Bognor U.D.C.	O. A. Bridges, High-st, Bognor	Nov. 21
School Additions	Hastings U.D. Sch.Bd.	A. Wells, Archt. Queen's-chambers, Hastings	do.
Hotel, Rothes, Elgin, N.B.		G. Sutherland, Archt. Elgin	Nov. 22
*Alteration of Drainage at Schools, Mitcham	Holborn Union	A. Saxon Snell, 22. Southampton-buildings, W.C.	Nov. 24
*Enlargement to School	Bushey S B.	W. H. Syme, 4, High-st. Watford	do.
*Temporary Floorings at Swimming Baths	Shoreditch Vestry	Clerk, Town Hall, Old-street, E.C.	Nov. 25
*Vagrant Wards at Workhouse	Hertford Union	Russell Austin, 13, Villiers-street, Hertford	Nov. 26
Workhouse Additions	Clifden (Ireland)Union	J. Perry, County Sur. Galway	Nov. 28
*Road and Sewer, Tottenham		Tuck-tt & Son, 2, Basinghall-street, E.C.	do.
*Brick and Concrete Sewer, &c.	Lewisham B. of W.	The Surveyor, Town Hall	Nov. 29
House, &c. Baildon		Isitt, Adkin & Hill, Archt. Prudential - buildings, Bradford	Nov. 30
School, Rhiwfawr, Glam.	Llanguicke Sch. Bd.	W. W. Williams, Archt. 63, Wind-street, Swansea	do.
*Additions and Alterations (considerable) to School Premises	Govrs. James Allen's Girls'Schools,Dulwich	A. J. Gale, Serjeants' Inn, Fleet-st.	Dec. 1
*Coastguard Buildings at Hastings	Admiralty	Offices, 21, Northumberland-avenue, W.C.	Dec. 2
*School Buildings	West Hartlepool S.B.	Offices, Park-road, West Hartlepool	do.
Public Conveniences, &c. Clarkson-st.	Sheffield Corp.	C. F. Wike, C.E. Town Hall	Dec. 3
Business Premises	Lenton & Nottingham Co-operative Soc. Ltd.	Ball & Lamb, Archt. 23, King-st. Nottingham	No date
Cottage, Moray-street	G. Reid	J. Milne, Archt. Elgin	do.
Nine Houses, Avenel-terrace, Allerton, Yorks.		R. Drake, Archt. 142, Allerton-road, Allerton	do.
Villa Residence, Pool, Yorks.	J. W. Foster	W. A. Hobson, Archt. 82, Albion-st. Leeds	do.
Ten Shops, Romiley Park, Sale		S. Smith, Archt. Sale	do.
Five Houses, Beaconsfield-st. Carlisle		— Roper, 5, Alton-street, Currock-rd. Carlisle	do.
*Pulling Down and Removing Church	MidlandCentralEstates	Essex, Nicol, & Goodman, 8, Newhall-street, Birmingham	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Manager for Sewage Farm	Longton Corp.	150*l*. per annum and residence	Nov. 19
*Clerk of Works	County Boro. of Sunderland	3*l*. 10s. per week	Nov. 21
*Clerk of Works	London County Asylum	5*l*. 5s. per week	Nov. 22
*Foreman of Road Making	Walthamstow U.D.C.	2*l*. 10s. per week	Nov. 25
*Architectural Assistant	Poplar B. of W.	3*l*. 3s. per week	No date

Those marked with an asterisk (*) are advertised in this Number. ***Competitions, p.*** iv. ***Contracts, pp.*** iv. vi. viii. & xix. ***Public Appointments, pp.*** xvii. & xix.

made from a mineral diatomaceous earth such as is found in the Island of Barbadoes. The inventors say they find from experiments that this earth is very applicable for the particular purpose, its chemical analysis being as follows: Silica, 80·20; alumina, 6·25; iron peroxide, 1·78; lime, 2·20; and volatile and organic matter, 9·57. In using the earth they prefer to mix a certain proportion of fire-clay, or asbestos, with it, say from 1 to 25 per cent., or may mix paper or other pulp, if a light brick is required, so that when the brick is fired the pulp is burned out leaving a porous and very light brick.

30,327.—Coverings for Walls and Ceilings: *H. Buyten.*—To provide a cheap substitute for wooden panels, &c., is used a sheet of plastic material, such as paper pulp, with or without binding substance and colouring matter, the grain of wood is imitated thereon by passing the sheet between embossing rollers, or pressing it between moulds, which are engraved so as to produce on the plastic sheet an imitation of wood fibre or grain in relief.

[1898.]—1,284.—Water Waste Preventers: *T. Gange, sen.*—To effect a noiseless discharge and to dispense with valves, is provided, beneath the inlet, a curved, fan-shaped spreader, which dips towards the bottom of the tank, in order to prevent noise by the inflow of water; in or about the centre of the bottom of the tank is placed a tube, having a sealed cover at its top and a flanged open base; before the cover is soldered to the tube is inserted a trumpet-shaped flanged tube, screwed at one end with a male thread, to form the syphon; to an eyelet on the cover's top is connected the end of a pull-down lever, pivoted between two jaws or lugs fixed at the top of the tank.

14,579.—Improvements in Tenement Buildings: *A. Turner.*—The claim is for the construction of tenement houses, which shall be better ventilated and more sanitary than those at present existing; the plans comprise an arrangement for making an area common to two houses together, the "cubicles" being ranged around the area. The scheme (devised by an architect living at Hong Kong) will be best understood by inspection of the plans attached to the specification.

14,635.—Computing Scales: *M. Levi.*—The tool or device is intended to serve for determining the square superficial areas of boards, floors, or other surfaces, the determination being effected—without recourse to calculation—by the displacement of a slide which is adjusted according to the width of the board, &c. The slide, containing the lengthwise measures, is adjusted to the width of the board so that the tool's stop-edge and the slide each embrace one edge of the board, in which action the slide adjusts itself opposite one of the numeral figures of the rows arranged upon the sides of the tape or rule-shaped tool, of which figures the one adjacent to the lengthwise number on the slide indicates the area required.

15,623.—Tile-making and Punching Tables: *C. Kempshall.*—The table has an open top across which are transverse rollers, over which the clay is passed in slab-like form, and has a hinged frame at its one end so attached that it can be brought down on to the clay for the punching of holes therein, the slab of clay being divided by wires at one end of the table, and also on a frame, which latter can be moved so as to cause the wires to pass from one side to the other of the table. The table is intended to make four tiles at a time, but the invention could be adapted for making more or less at a time.

17,731.—Taps for Steam, Water, Gas, and other Liquids or Fluids: *J. B. Butterfield.*—The novelty lies in reversing the position of the plug—that is to say, the cone has its larger end downwards; the plug is forced upwards against the valve-seating by a spring, spiral or otherwise, or by an adjustable screw; besides reversal of the plug, a shoulder is formed on the plug-spindle to fit against a corresponding surface in the valve-box; thus the valve cannot become jammed or unduly tight, whilst, as is claimed, the escape of liquids or fluids or gases is entirely prevented.

17,792.—Ventilators for Rooms, Buildings, &c.: *J. Carr.*—The ventilator's lid has two sides, a curved back, and a top; the lid is pivotted between the sides of the box, or case, by pins secured to its back; a stud fixed to a side of the lid projects through a curved slit in a side of the case; a cord passing over a pulley on a stud fixed outside the case has one end connected to the stud on the side of the lid and its other end hangs down, so that by pulling the string the lid can be moved in position; an air deflector is also attached to the contrivance, being preferably pivotted between the sides of the case with a cord and pulley for its adjustment.

New Applications.

October 24—29.

6,991A, E. Weston, Index Needles or Pointers for Electrical and other Indicating or Measuring Instruments. 22,296, W. Menzies, Seats of Closets. 22,302, Dibbles, Waste or Slop Water-closets. 22,310, Frances, Grates for Domestic Fireplaces. 22,315, C. E. Kelway, Electrical Time Indicator. 22,319, R. Y. Foley, Building Tiles. 22,322, J. M. Matthews, Locks and Fastenings for Doors, &c. 22,327, H. Stanton, Fire Resisting Floors. 22,344, Delavan & Brérat, 22,601, H. C. Spinney, and 22,805, T. C. J. Thomas, Arc Lamps. 22,347, A. W. W. Miller, Construction of Walls, Arches, or Floors, Applicable for Grain Storage Bins, &c. 22,354, W. R. Gorell, Rope Clamp. 22,369, B. Reynard, Washing and Cleaning Windows, &c. 22,370, C. G. Wendschuch, Disinfecting Apparatus. 22,380, W. Eaves, Sash and other Windows. 22,388, Margaret C. Mann, Curtain Rod for Doors or Windows for Ventilation and Draught Exclusion. 22,389, W. Warner, Sewer Flap Syphon Trap. 22,390, Dussoart & Légé, Saws, &c., for Cutting Marble, Slate, or other Stone or Hard Substances. 22,399, E. M. Mitton, jun., Nail Making Machines. 22,403, A. H. Hastilow, Combined Bolt and Handle. 22,404, C. Kastens, Protection of "French" and similar Windows. 22,405, S. H. Thurston, Coating Iron, Steel, and other Metals with Copper. 22,412, R. B. Adams, Gas Stoves. 22,415, E. Liebscher, Spraying Devices for Liquids, Paints, &c. 22,430, H. C. Schmidt, Compression Cocks. 22,448, Keiths, Coal Saving Fire Grate. 22,464, P. Pichard, Lathes. 22,475, T. Longmore and 22,479, R. B. C. Douglas Circular Saw Guards. 22,480, J. Webster and Others, a Building Brick. 22,485, W. H. Johnson, Metallic Lathing. 22,495, T. F. J. Truss, Raising Water from Mines and Other Places. 22,499, W. Williamson, Destruction of all Insects in Greenhouses or Other Horticultural Structures, &c., and also in the open air. 22,512, Katie M. Moran, Road, Street, and Footpath Cleaning. 22,515, C. M. F. Andersen, Locks. 22,523, M. H. Smith, Conduits for Electrical Tramways. 22,529, J. Nash, Oil-Stone Cases. 22,530, J. Schopp, Street Sweeping. 22,537, G. Markt, Electrical Push Buttons. 22,539, Schöneweess & Röchling, Sand-Blast Machines for Cleaning Castings, &c. 22,543, T. Colles, Sash-Window Pulleys. 22,547, S. Harrison, Automatical Replacement of Fuses in Electrical Light and Power Installations. 22,559 and 22,644, T. W. Twyford, Joints or Couplings of Sanitary and Other Pipes, and Traps and Bends of Sanitary Appliances. 22,566, G. Bowmar, Files. 22,568, Thompson & McEwen, Syphon Cisterns and Water-Waste Preventers. 22,569, E. N. W. Hume, "Self-replacing Indicator for Bells, Telephones, &c. 22,571, W. Oliver, Oven Doors, &c. 22,580, H. W. C. Cox, Fire Extinction. 22,583, Sharp & Brothers, to Enable Pipes to Resist Bursting or Straining from Frost or Sudden Shocks. 22,584, J. F. O'Brien, Telephone Index. 22,591, Farrer & Brown, Stopping or Closing Devices for Pipes or Conduits. 22,596, J. Wright, Nozzle for the Protection of Firemen Fighting Fire. 22,599, C. D. Haskins, Electrical Meters. 22,603, Long & Schattner, Pre-payment Electricity Meters. 22,618, A. C. V. Davies, Securing Screw Caps, Nuts, Plugs, &c. 22,626, J. L. Wiles, 22,707, Buck & Torrey, and 22,737, F. Strickland, Gas, Oil, and Other Internal Explosion Engines. 22,627, J. H. McGrouther and Others, Fireproof Doors, Shutters, or similar Structures. 22,628, E. Spitz, and 22,649, J. W. Hunter, Gas and Oil Engines. 22,630, S. R. Baildon, Punkahs. 22,635, W. H. Kilbowm, Track-sanding Apparatus. 22,641, Moorwoods, Roofing. 22,647, J. Ward, Earthenware Pipes and Copings and Pipe-jointing. 22,650, J. Lee, Flush Supply of Disinfectants to Water-closets. 22,659, T. Thornton, Gauges for Saw Fences. 22,666, J. Horne, Map Case, to show two sections at once. 22,672, Nodder & Rogers, Window-sash Fastener. 22,678, Godwin & Pickerill, Wall, Ceiling, and other Tiles. 22,697, Wibratte & Lanaspèze, for Regulating the Intensity of Electric Currents. 22,710, Stanley & Fieldwick, Drawing Boards and T-Squares. 22,712, F. Knape, "Securing Ladder Scaffolding." 22,722, C. P. Kinnell, Fittings for Hot-water Circulating Pipes. 22,740, B. Hibbert, Combined Centrolineaid and T-Square for Architects, Artists, Draughtsmen, &c. 22,754, A. H. Garner, Ornamental Heads for Iron Pallisades and other Ornamental Ironwork. 22,758, Price, Walker, & Co., Saw Guard. 22,774, R. W. McDonald, Down-pipes of Flushing Cistern, Lavatories. 22,780, F. Fieldler, Flock Paperhanging. 22,784, J. B. Lafond, Water Gas. 22,799,

F. J. J. Gibbons, Locks and Keys. 22,792, J. Kershaw, Wood-sawing Machinery. 22,802-3, L. J. Steele and Others, Incandescence Electrical and other Lamps. 22,808, T. A. Branch, Air-inlet Ventilator for Drains, Sewers, &c. 22,809, T. Smart, Safety Breaks for Cranes, Winches, &c.

SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

October 22.—By CUNNAH & ROBERTS (At Chester).

Chorlton, Cheshire.—The Mount Farm, 118 a. 3 r. 9 p., f. £6,100
Strawberry Farm, 32 a., f. 2,000
Padeswood, Flint.—Bistre Farm, 80 a. 2 r. 20 p., f. 2,400
Bistre, Flint.—A plot of building land, 2 a. 3 r. 0 p., f. 285

October 25.—By J. STRAKER & SON (at Abergavenny).

Penrose, Mon.—Penrose Farm, 307 a. 0 r., 28 p., f., r. 270*l.* 6,600

October 26.—By H. DUKE & SON (at Moreton).

Owermoigne, Dorset.—A freehold estate, comprising 215 a. 0 r. 9 p. 3,500

October 27.—By W. WILSON & SON (at Sandbach).

Betchton, Cheshire.—Gravel Bank Farm, 12 a. 1 r. 2 p., f. 1,240

By G. B. HILLIARD & SON.

Sandon, Essex.—Southlands Farm, 367 a. 1 r. 36 p., f. 3,825
Southminster, Essex.—Hall-rd., a plot of building land, 1¼ a., f. 500

By BRIANT & SON.

Bermondsey.—92, 94, 96, and 98, Camilla-rd., u.t. 39½ yrs., g.r. 20*l.* 800

By HAMILTON & MIALL.

West Brompton.—11, Redcliffe Mews, u.t. 65½ yrs., g.r. 6*l.*, e.r. 30*l.* 200

By KNIGHT, FRANK, & RUTLEY.

Hampstead.—10, Stanley Gardens, u.t. 64½ yrs., g.r. 12*l.*, r. 60*l.* 550

By R. PRICE & SON.

Clapham.—82, 84, and 86, Park-pl., f. 855
1, 2, and 7, Thornbury-ter., u.t. 83 yrs., g.r. 15*l.*, r. 96*l.* 970
16, Kingswood-rd., u.t. 83 yrs., g.r. 6*l.* 15s., r. 34*l.* 335
Old Kent-rd.—8, 9, and 10, Bowles-rd., u.t. 44 and 70 yrs., g.r. 14*l.* 5s. 730
Merton.—1, 2, and 3, Willow View, u.t. 83 yrs., g.r. 10*l.* 10s. 108

By WM. WESTON.

Bayswater.—243, 245, and 247, Westbourne-grove, and 1A and 2A, Denbigh-rd., u.t. 44 yrs., g.r. 28*l.*, r. 305*l.* 3,550

By FAREBROTHER, ELLIS, & CO.

Coldash, Berks.—Sunnyside, and 8 a. 1 r. 6 p., f. 2,000
Ball's Pond.—Ball's Pond-rd., f.g.r.'s 30*l.*, reversion in 5 yrs. 2,400
Ball's Pond-rd., a peppercorn g.r., reversion in 5 yrs. 910
Dalston.—90, Dalston-lane, u.t. 53 yrs., g.r. 6*l.* 10s., r. 38*l.* 500
Hackney.—64 and 66, Downs Park-rd., u.t. 64 yrs., g.r. 14*l.* 14s., r. 105*l.* 1,220
70, Downs Park-rd., and 38, Ferncliff-rd., u.t. 64 yrs., g.r. 7*l.*, r. 50*l.* 580
Regent's Park.—124, Albany-st., u.t. 25 yrs., g.r., &c., 11*l.* 5s., r. 70*l.* 570
St. Lawrence, Kent.—A freehold house and 1 a. 0 r. 9 p., r. 18*l.* 485
Wandsworth.—152, St. John's Hill, u.t. 60½ yrs., g.r. 10*l.*, r. 60*l.* 615

By C. C. & T. MOORE.

Limehouse.—Gun-lane, "The Duke of Cornwall" b.-h., f., r. 35*l.* 1,460
Upton Pk.—72 and 74, Selwyn-rd., u.t. 70 yrs., g.r. 10*l.*, r. 44*l.* 520
Canning Town.—22 and 23, Victoria Dock-road, f., r. 85*l.* 1,300
Battersea.—6 to 16 (even), Henley-st., u.t. 63 yrs., g.r. 15*l.* 1,035
33 and 35, Henley-st., u.t. 66½ yrs., g.r. 5*l.* 10s.. 350
Mile End.—22, 24, 26, and 28, Moody-st., f., r. 145*l.* 12s. 1,705
Poplar.—100, Bath-st., f., r. 33*l.* 16s. 315

By STIMSON & SONS.

Clapham.—69 and 71, Sugden-rd., u.t. 87 yrs., g.r. 14*l.* 625
121, Grandison-rd., u.t. 85 yrs., g.r. 6*l.* 10s., e.r. 34*l.* 340
Hackney.—37 to 55 (odd), Brunswick-st., u.t. 46, 49, and 50 yrs., g.r. 22*l.* 10s. (in lots) 1,535
Barking.—23, 25, and 27, Cambridge-rd., u.t. 84 yrs., g.r. 12*l.* 12s. 425
Old Kent-rd.—1 and 2, Pepler-rd., u.t. 47 yrs., g.r. 12*l.* 12s. 470
Camberwell.—8 and 10, Jardin-st., u.t. 71 yrs., g.r. 14*l.*, r. 58*l.* 175
Brixton.—57 and 59, Cornwall-rd., u.t. 72 yrs., g.r. 5*l.* 8s. 6d., r. 40*l.* 440
Honour Oak.—8, Canonbie-rd., u.t. 97½ yrs., g.r. 9*l.*, r. 50*l.* 480
Dulwich.—178, Upland-rd., u.t. 95 yrs., g.r. 7*l.* 10s., r. 38*l.* 465

By J. BLECKLY SMITH.

Bedford-row.—20, Millman-st., u.t. 8½ yrs., g.r. 40*l.* 175
Hampstead-rd.—59, Robert-st., u.t. 25 yrs., g.r. 21*l.* 170
Mile End.—5, 7, and 9, Ewing-st., u.t. 76½ yrs., g.r. 15*l.* 15s. 810

By W. ASHMOLE.

Bromley-by-Bow.—2 to 20 (even), Edgling-rd., u.t. 63½ yrs., g.r. 30*l.* 10s. 1,565
Stratford.—16 to 32 (even), Mortham-st., u.t. 71 yrs., g.r. 27*l.* 1,105
22 to 48 (even), Manby-grove, u.t. 476 yrs., g.r. 49*l.* 3,800
Forest Gate.—1 to 25 (odd), Sylvan-rd., u.t. 67½ yrs., g.r. 30*l.* 1,805
Sylvan-rd., i.g.r. 9*l.* 15s., u.t. 67½ yrs., g.r. 1*l.* 10s. 160
Woodford Green.—1 to 2, Elm-cottages, u.t. 70 yrs., g.r. 5*l.* 215
1, 2, and 3, Leaver's-cottages, f., r. 56*l.* 855
1 to 8, Farey's-row, f. 1,460
Chingford-lane, two freehold houses, r. 30*l.* 10s. £580
Chingford-lane, fifteen plots of building land, f. 466
Elm-grove, eight plots of building land, f. 165
Chingford-lane, f.g.r. 15*l.*, reversion in 90 yrs... 185
Lime-terr., f.g.r. 20*l.* 10s., reversion in 95 yrs... 485
Leytonstone.—Harrow Green, a freehold stable, r. 4*l.* 130
Forest Gate.—Romford-rd., f.g.r.'s., 100*l.* reversion in 86½ yrs. (in lots)..... 3,240
Brentwood, Essex.—Brook-st., five freehold cottages, r. 25*l.* 350

By R. WATERMAN & SONS (at Maidstone).

Sutton Valance, Kent.—Town Well House and a cottage, f. 510
South-lane, a freehold fruit plantation..... 930

By A. BURTENSHAW (at Hastings).

Salehurst, &c., Sussex.—The Salehurst Park Estate, 627 a. 1 r. 6 p., f. 8,200
Salehurst, Sussex.—Five freehold cottages and 0 a. 0 r. 39 p. 286

By EDWIN EVANS (at Streatham).

Streatham.—Mitcham-lane, &c., 225 plots of building land, f. (in lots)..... 22,294

October 28.—By HUSSEY & SON (at Exeter).

Tiverton, Devon.—Palfreys Barton, Ewings, and Knacker's Hole Estates, 355 a. 1 r. 16 p., f. 5,000

By DEBENHAM, STORR, & SONS (at Margate).

Margate, Kent.—15, 17, 19, and 21, Ethelbert-rd., f., r. 200*l.* 3,045

By BARR & BARR.

Hornsey.—Church-lane, Durley Dene, Lyndhurst, and Glasbury, u.t. 92½ yrs., g.r. 24*l.*, r. 166*l.* 1,930
Crouch End.—13, Rosebery Gardens, u.t. 96½ yrs., g.r. 9*l.*, e.r. 60*l.* 660

By JOHN DAVIES.

Walthamstow.—Wingfield-rd., Clarendon Cottage, f. 320
40 to 50 (even), Lennox-rd., f., r. 155*l.* 1,515

By HAMPTON & SONS.

Bloomsbury.—Hunter-st., &c., i.g.r. 152*l.* 5s., u.t. 7¼ yrs., g.r. 50*l.*, and 25*l.* extra for last half-year 420

By BAKER & SONS.

City of London.—London Wall, Finsbury-circus, &c., area 49,200*l.*, a building lease for 80 yrs., at per annum 17,000

By MESSRS. MELLERSH.

Bethnal Green.—Usk-st., "The Rose" p.-h., f., r. 40*l.* 1,800
66, Vallance-rd., f., r. 24*l.* 485
Clapton.—156, 158, and 160, Glenarm-rd., u.t. 75 yrs., g.r. 15*l.* 675

By R. W. SCOBELL.

Dalston.—46, Broke-rd., u.t. 47 yrs., g.r. 4*l.*, r. 30*l.* 290
Clapton.—142, Clapton High-rd., f. 1,325
Hackney.—25, Sutton-pl., u.t. 30 yrs., g.r. 21*l.* 10s. 450
Sutton-pl., a plot of building land, f. 500
St. John's Wood.—4, Fairfax-mews, u.t. 46 yrs., g.r. nil, r. 25*l.* 240

By TOWERS, ELLIS, & CO.

Hyde Pk.—7, Leinster-st., u.t. 39½ yrs., g.r. 2*l.* .. 325
6a, Porchester-mews, u.t. 40 yrs., g.r. 5*l.* 200
Bayswater.—10, Sunderland-ter., u.t. 50½ yrs., g.r. 11*l.* 565

October 31.—By SEDGWICK, SON, & WEALL.

Hendon.—Lawrence-st., &c., a corner plot of land, f. 300
Harlington, Middx.—Enclosure of building land, 23 a. 0 r. 37 p., f. 3,300
Victoria-lane, Church Eield, 7 a. 2 r. 11 p., f. .. 1,020
New-rd., a piece of land, 1 a. 2 r. 30 p., f. 200

***Contractions used in these lists.*—F.g.r.** for freehold ground-rent; **l.g.r.** for leasehold ground-rent; **i.g.r.** for improved ground-rent; **g.r.** for ground-rent; **r.** for rent; **f.** for freehold; **c.** for copyhold; **l.** for leasehold; **e.r.** for estimated rental; **u.t.** for unexpired term; **p.a.** for per annum; **yrs.** for years; **st.** for street; **rd.** for road; **sq.** for square; **pl.** for place; **ter.** for terrace; **cres.** for crescent; **yd.** for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G.		
ton	8/0/0	0/0/0
Teak, E.I....load	10/10/0	15/10/0
Sequoia, U.S.ft.cu.	1/9/0	2/2/0
Ash, Canada, load	3/15/0	5/0/0
Birch, do.....	3/10/0	5/10/0
Elm, do.....	4/10/0	5/10/0
Fir, Dantsic, &c..	2/15/0	4/15/0
Oak, do.....	2/2/6	4/3/6
Canada	4/2/6	6/0/0
Pine, Canada red	0/0/0	0/0/0
Do. yellow	4/2/6	6/0/0
Lath, Dantsic, fath	4/10/0	5/10/0
St. Petersburg..	4/0/0	8/10/0
Wainscot, Riga, &c., log.....	4/15/0	6/5/0
Odessa, crown.....	4/15/0	6/5/0
Deals, Finland and 1st std 100	9/5/0	9/15/0
Do. 4th & 3rd ..	9/5/0	9/15/0
Do. Riga	7/15/0	8/15/0
St. Petersburg, 1st yellow	11/5/0	13/15/0
Do. 2nd yellow.	10/5/0	11/15/0
Do. white	9/5/0	11/5/0
Swedish	9/5/0	16/5/0
White Sea	10/5/0	17/10/0
Canada, Pine 1st	18/0/0	24/10/0
Do. do. 2nd	13/0/0	16/10/0
Do. do. 3rd, &c.	6/0/0	9/10/0
Do. Spruce, 1st	8/10/0	10/10/0
Do. do. 3rd and 2nd	7/0/0	8/10/0
New Brunswick	7/0/0	8/0/0
Battens all kinds	5/0/0	16/0/0
Flooring boards, sq., 1 in. prep. 1st.....	9/9	16/3
Do. 2nd	0/13	0/13/3
Other qualities—	6/6	7/0
Cedar, Cuba, ft.	/4	/4½
Honduras, &c.	/3½	/4½
Mahogany, Cuba	/5½	/7
St. Domingo, cargo av.	/5	0/1/3
Mexican, do. do.	/3½	/4
Tobasco, do. do.	/4	/5½
Honduras, do.	/4	/6
Box, Turkey, ton	4/0/0	15/0/0
Rose, Rio	7/0/0	14/0/0
Bahia	6/0 0	12/0/0
Satin, St. Doming.	0/0/5	0/1/0

TIMBER *(continued)*.

Satin, Porto Rico	0/0/9	0/2/0
Walnut, Italian ..	0/0/3	0/0/7

METALS.

Iron—Pig, in Scotland .....ton	2/9/7½	0/0/0
Bar, Welsh, in London	6/0/0	6/5/0
Do. do. at works in Wales	5/15/0	5/17/6
Do. Staffordshire, in London.....	6/5/0	7/10/0
COPPER—British cake and ingot	59/5/0	59/15/0
Best selected ..	60/5/0	60/15/0
Sheets, strong..	65/0/0	66/0/0
Chili bars	55/15/0	0/0/0
YELLOW M. L. lb.	5d.	5⅛d
LEAD—Pig Spanish ....ton	13/10/0	0/0/0
English com. bands	13/12,6	0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards ..	14/15/0	0/0/0
Pipe.....	15/5/0	0/0/0
ZINC—English sheet.....ton	28 0/0	0/0/0
Vieille Montagne	29/15/0	0/0/0
Spelter	24/15/0	0/0/0
TIN—Straits	83/12/6	0/0/0
Australian.....	84/2/6	84/10/0
English Ingots..	86/10/0	87/10/0
Banca	0/0/0	0/0/0
Billiton	0/0/0	0/0/0

OILS.

Linseed .....ton	17/7/6	0/0/0
Cocoanut, Cochin	27/15/0	0/0/0
Do. Ceylon	24/10/0	0/0/0
Palm, Lagos	21/15/0	0/0/0
Rapeseed, English pale	24/0/0	0/0/0
Do. Brown	22/10/0	0/0/0
Cottonseed ref. ..	15/0/0	16/0/0
Oleine.....	17/0/0	18/0/0
Lubricating U.S.	0/5/3	0/7/6
Do. Black	0/5/0	0/6/6
TAR—Stockholm barrel	1/5/0	0/0/0
Archangel.....	0/18/0	0/0/0
Turpentine	26/10/0	26/15/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100 unless in some exceptional cases and for special reasons.]

ABERGAVENNY.—Accepted for the erection of a villa residence, Brecon-road, for Mrs. L. Hiley. Mr. E. A. Johnson, architect, Abergavenny. Quantities by architect:—
J. Lloyd, Trealaw, Glam.* £1,398
* Revised and reduced estimate.

BARKBY (Leicestershire).—Accepted for new sewerage scheme for the Barrow District Council. Messrs. Simpson & Harvey, engineers and surveyors, Leicester:—
H. H. Barry, Radcliffe-on-Trent, Nottingham..... £3,320
[Lowest tenders received.]

CAMBRIDGE.—For the erection of a house at Great Shelford, for Mr. C. L. Edwards. Mr. Frank Waters, architect, 73, Alexandra-street, Cambridge. Quantities by Mr. W. Culling Gaze, 2, Walbrook, E.C.:—

Kerridge & Shaw	£1,380	Scales & Robins.....	£1,245
Coulson & Lofts	1,340	Prime & Sons*.....	1,230
Thoday & Co., Ltd.	1,303	* Accepted.	

CARISBROOKE (Isle of Wight).—For the construction of sewerage works, for the Rural District Council. Messrs. Stratton & Millgate, engineers, 21, Quay-street, Newport, I.W. Quantities by engineers:—
David Hayden £2,027
Sisera Dredge, Gurnard, I.W. (accepted)..... 1,850

CROYDON.—For additions, &c. to hospital, London-road, for the Committee. Mr. C. Henman, architect, 64, Cannon-street, London, E.C.:—

T. Pearce .....£	10,567 10 0	J. Smith & Sons ....£	8,900 0 0
W. Potter	10,344 2 6	Wm. Smith & Son..	8,750 0 0
S. Page..... ...	9,695 0 0	D. W. Barker	8,744 0 0
E. P. Bulled & Co.	9,349 0 0	Huntley Bros.....	8,575 0 0
Balaam Bros.....	9,286 0 0	E. J. Saunders,	
W. Akers & Co. ..	9,247 0 0	Croydon*	8,448 0 0

* Accepted.

DROGHEDA.—For the construction of filter beds, for the Corporation:—

Barnes.....£	3,857 0 0	Henly .....£	2,588 15 0
Smullen	2,673 0 0	Small, Banbridge*..	2,496 12 0
McLaren	2,638 11 8	* Accepted.	

Borough Engineers' estimate, £2, 550.

DURHAM.—For the execution of sewerage works, Belmont, for the Rural District Council. Mr. G. Gregson, surveyor, Eastwood, Western Hill, Durham. Quantities by the surveyor:—

John Manners.....£	292	Robert Oliver.....£	190
John Carrick	230	F. C. Dixon, Durham*	160
		* Accepted.	

HUDDERSFIELD.—For the erection of a dwelling house, Lowerhouses. Mr. J. Berry, architect, 9, Queen-street, Huddersfield:—
Masonry.—J. W. Boothroyd, Almondbury
Joinery.—W. L. Haigh, Paddock
Plumbing.—John Marsden, Market-place, Huddersfield
Plastering.—J. C. Wintersbottom & Son, Damside
Painting—J. & H. Sykes, Lowerhouses
Slating.—Pickles Bros., Fountain-street, Huddersfield
Concreting.—John Cooke, Little Royd
} £300

HUDDERSFIELD.—For alterations to property, Outlane. Mr. J. Berry, architect, 9, Queen-street, Huddersfield:—
Masonry.—John Haigh & Sons, Golcar
Joinery.—Arthur Park, Stainland
Plumbing.—George Garton & Son, Market-place, Huddersfield
} £210

KIRKBY-IN-ASHFIELD.—For the execution of sewerage works (two contracts), for the Urban District Council. Mr. H. Walker, C.E., Newcastle Chambers, Angel-row, Nottingham. Quantities by engineer:—

	Contract No. 1.	*Contract No. 2.*
Richard Lomax.....£	12,270 6 8	—
J. H. Vickers, Ltd.	9,797 0 0	£319 0 0
J. O. Nowell & Sons	9,404 7 6	—
R. Holmes	9,400 0 0	430 0 0
W. & J. Foster.....	9,324 9 5	380 0 0
H. Weldon	8,944 19 1	422 3 8
M. Hall & Sons.....	8,275 3 2	428 12 1
H. H. Barry	8,225 10 0	—
J. F. Price	8,199 10 0	348 0 0
J. Hawley & Son	8,030 9 0	—
Cope & Raynor.....	7,899 0 0	260 0 0
J. Lane & Son, Skegby*	7,324 8 9	342 0 0

* Accepted for both contracts.

[Engineer's estimate, No. 1, £7,656; No. 2, £273.]

LONDON.—For the erection of new premises, for Messrs. Mellin's Food Company for India, Limited, Upton Park, East Ham, E. Mr. G. P. Smedley, architect, 110, St. Martin's-lane, Charing Cross, W.C. Quantities by Mr. W. Lockwood, 110, St. Martin's-lane, W.C.:—

T. J. Messom .....£	5,193	Perry & Co. .....£	5,688
J. Outhwaite & Son	5,937	Miskin & Sons.....	5,640
F. & F. H. Higgs;.....	5,843	Dearing & Son (accepted)	5,401

LONDON.—For the erection of the Terriss Theatre, Lower-road, Rotherhithe, for Messrs. Marler & Saunders. Mr. W. G. R. Sprague, architect. Fitzalan House, Arundel-street, Strand, W.C. Quantities by Mr. A. R. Henderson, surveyor, 47, Pall Mall, S.W.:—

Harris & Wardrop .....£	25,800	C. F. Kearley.....£	21,510
Patman & Fotheringham.	25,551	Stimpson & Co.....	21,500
W. H. Lorden & Sons ..	22,420	C. Gray Hill	21,500
F. & H. F. Higgs	22,375	W. Wallis*	21 022
Kirk & Randall.....	22,240	Wilkinson Bros.	20,133
H. L. Holloway.....	22,132	W. Wallis*	17,000
W. Downs	21,550		

* Amended and accepted.

LONDON.—For paving with wood blocks the carriageways of Copenhagen-street and Tollington-park, N. For the Vestry of St. Mary, Islington. Mr. J. Patten Barber, Chief Surveyor:—

	Copenhagen-st.	Tollington-park.
F. A. Jackson & Son.....£	4,285 1 0	£7,420 10 10
J. Mowlem & Co.	4,154 2 6	7,444 5 10
William Griffiths, Bishopsgate-street Without, E.C.	3,871 8 7	6,838 5 0*
Acme Wood Flooring Co., Hackney, N.E.	3,727 6 1*	—

* Accepted.

LONDON.—For new system of drains and sanitary appliances at 47, Pall Mall, S.W., for Messrs. Bell, Rannie, & Co. Mr. A. R. Henderson, surveyor, 47 Pall Mall, S.W.:—

Houghton & Co.	£230	W. S. Beaton*	£145
B. Finch & Co.	190	Accepted.	

LONDON.—Accepted for the erection of ten villas in Lordship-lane, Tottenham, for Mr. E. Chick. Mr. H. Michell, surveyor, 25, Moorgate-street, E.C.:—
W. Hawley, Tottenham £3,600

LONDON.—For alterations to Nos. 6 and 7, Addle-street, E.C. Mr. Charles Watkins, architect:—

Heeps	£1,672	Mason	£1,528
Abrahams	1,597		

LONDON.—For alterations, decorations, &c., at 168, Clerkenwell-road, E.C.:—

Heeps	£333	Little & Senecal	£272
Hawtrey	310		

LONDON.—For new billiard-room, &c., to "The Grosvenor Arms," Sidney-road, Stockwell, for Mr. G. R. Park. Mr. A. J. Perriam, architect, 43, Cannon-street, E.C.:—

Antill & Co.	£1,885	Gould & Brand	£1,665
Maxwell Bros.	1,8 0	Edwards & Medway	1,647
Rhodes..	1,689	Bragg & Sons (accepted)	1,544

LONDON.—For basement walls of Cranston's Waverley Temperance Hotel, Southampton-row, W.C. Messrs. Geo. Waymouth & W. Ernest Hazell, architects, 23, Moorgate-street, E.C.:—
Higgs & Hill
F. & H. F. Higgs
Dove Bros.
Holloway Bros.
Colls & Sons (accepted
} At schedule prices.

MAIDENHEAD.—For the erection of shop, warehouse, and stabling, at No. 8, Park-villas, King-street, for Mr. Geo. Mattingley. Mr. John L. Kirk, architect, Queen-street, Maidenhead:—

Partlo Bros.	£1,084 0	Chas. W. Cox & Son	£844
Silver & Sons	1,032 0	W. Creed	823
J. Frewing	873 16	(All of Maidenhead.)	

MAIDENHEAD.—For making alterations and additions to No. 9, Park Villas, King-street, for Mr. Owen Price. Mr. John L. Kirk architect, Queen-street, Maidenhead:—

Chas. W. Cox & Son	£391 0	W. Creed	£290 0
Chas. Woodbridge	364 10	J. Frewing	248 6
[All of Maidenhead.]			

NEWBURY (Berks).—For the erection of farm buildings, Weston Farm, for Sir Francis Burdett. Mr. J. H. Money, architect, The Broadway, Newbury:—

H. Hoskings	£1,790	G. Elms & Sons, Newbury*	£1,510
		* Accepted.	

NEWHAVEN (Sussex).—For the drainage and sewerage of nineteen houses, Lewes-road, Newhaven. Mr. F. J. Rayner, C.E., surveyor and engineer, Newhaven, Sussex:—

M. Woolger	£135	C. Cook	£127

NEWHAVEN (Sussex).—For the erection of a brick and iron building. Mr. F. J. Rayner, C.E., surveyor and engineer, Newhaven, Sussex:—
Redman Bros., Newhaven £100

NEWHAVEN (Sussex).—For kerbing, paving, &c., Lewes-avenue, for the Urban District Council. Mr. F. J. Rayner, C.E., Town Surveyor and Engineer, Newhaven. Quantities by Town Surveyor and Engineer:—

H. A. Chambers	£925 0 0	Grounds & Newton	£814 3 9

NEWHAVEN (Sussex).—For drainage and sewers of seventeen houses, Chapel-street, Newhaven. Mr. F. J. Rayner, C.E., surveyor and engineer, Newhaven, Sussex:—
M. Woolger, of Newhaven £135

NEWQUAY.—For the erection of Council Buildings, &c, for the Urban District Council. Mr. John Ennor, jun, surveyor, Commercial-square, Newquay:—

Tom J. Smith	£1,197	W. F. James, Newquay*	£560
Tippett & Cocking	994	* Accepted.	

NOTTINGHAM. — For alteration of premises, offices, and stabling at Poplar-square, for the Nottingham Hide, Skin, and Fat Market Company, Ltd. Mr. Robt. Clarke, architect, Prudential-buildings, Nottingham:—

F. Wallis	£3,161 0	Hy. Vickers	£2,870 0
Thos. Fish & Son	3,000 0	A. B. Clarke	2,763 0
F. Messom	2,902 0	J. H. Vickers (accepted)	2,747 10
J. H. Williamson	2,898 0		

SWANSEA.—For the erection of additional wards at hospital, for the Corporation:—

Jenkins	£380 0	Humphreys, Ltd.	£310 0
The Wire Wove Waterproof Roofing Co.	350 0	Chas. Marles, Brunswick-street, Swansea*	304 14
John Goodridge	312 10	* Accepted.	

SYSTON (Leicestershire).—Accepted for the amended sewerage scheme, for the Barrow District Council. Messrs. Simpson & Harvey, engineers and surveyors, Leicester:—
Mr. T. Philbrick, Leicester £6,240
[Lowest of seven tenders received]

TUNSTALL.—For the erection of bank premises, for the Manchester and Liverpool District Banking Company, Limited. Messrs. Wood & Hutchings, architects, Town Hall, Tunstall:—

Massey & Son	£5,246	W. Grant	£4,802
Jno. Stringer	5,154	C. Cope	4,784
Yorke & Goodwin	4,977	W. Cooke, Burslem*	4,722
T. Godwin	4,850	* Accepted.	

WANSTEAD (Essex).—Accepted for the erection of a school (one story) and a caretaker's cottage on the Cobbold-road site, for the Wanstead School Board. Mr. John T. Bressey, architect, 70 and 71, Bishopsgate-street Within, E.C.:—
Alfred Reed & Son £9,418

WHITBY.—For additions to premises, Skinner-street, to convert them into five shops with a boarding house over them, for Mr. James Gray, J.P. Mr. E. H. Smales, architect, 5, Flowergate, Whitby:—

Robinson Harland	£3,733	Chas. Winterburn	£3,445
John Braien, Silver-street, Whitby*	3,480	* Accepted.	

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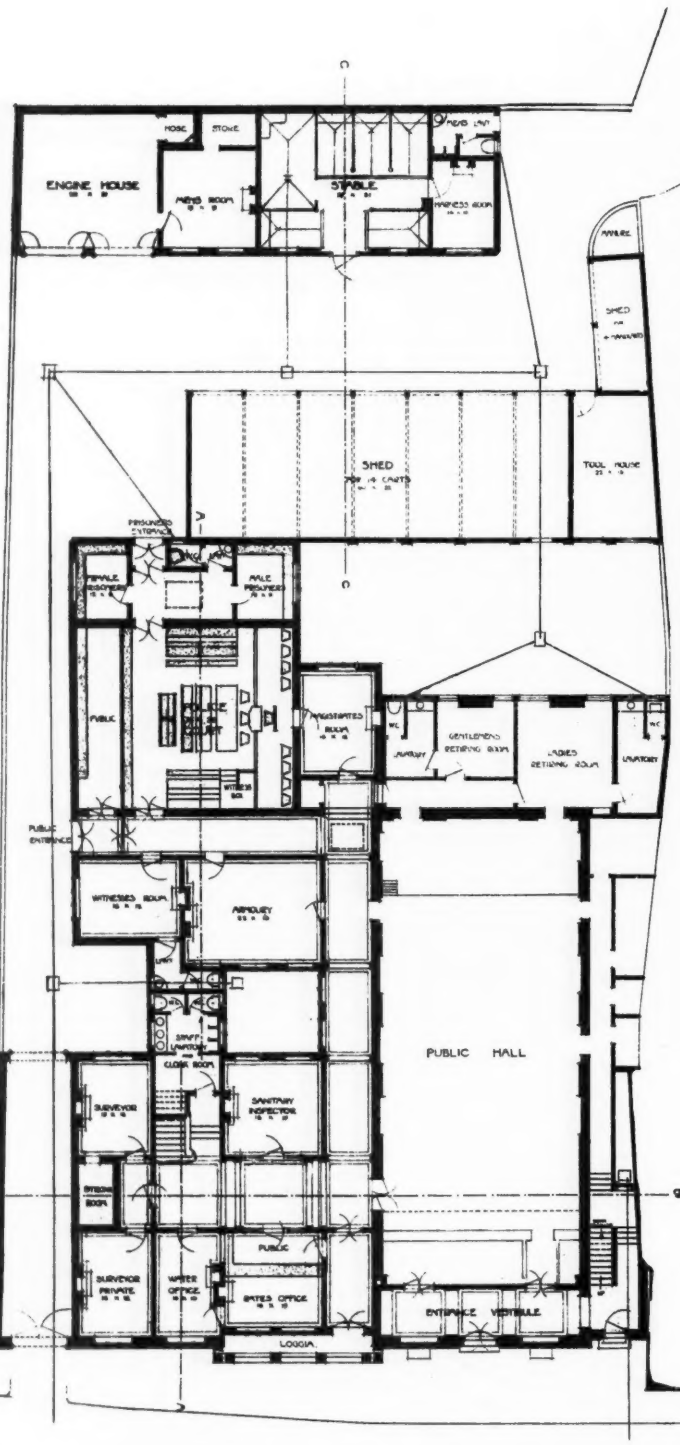

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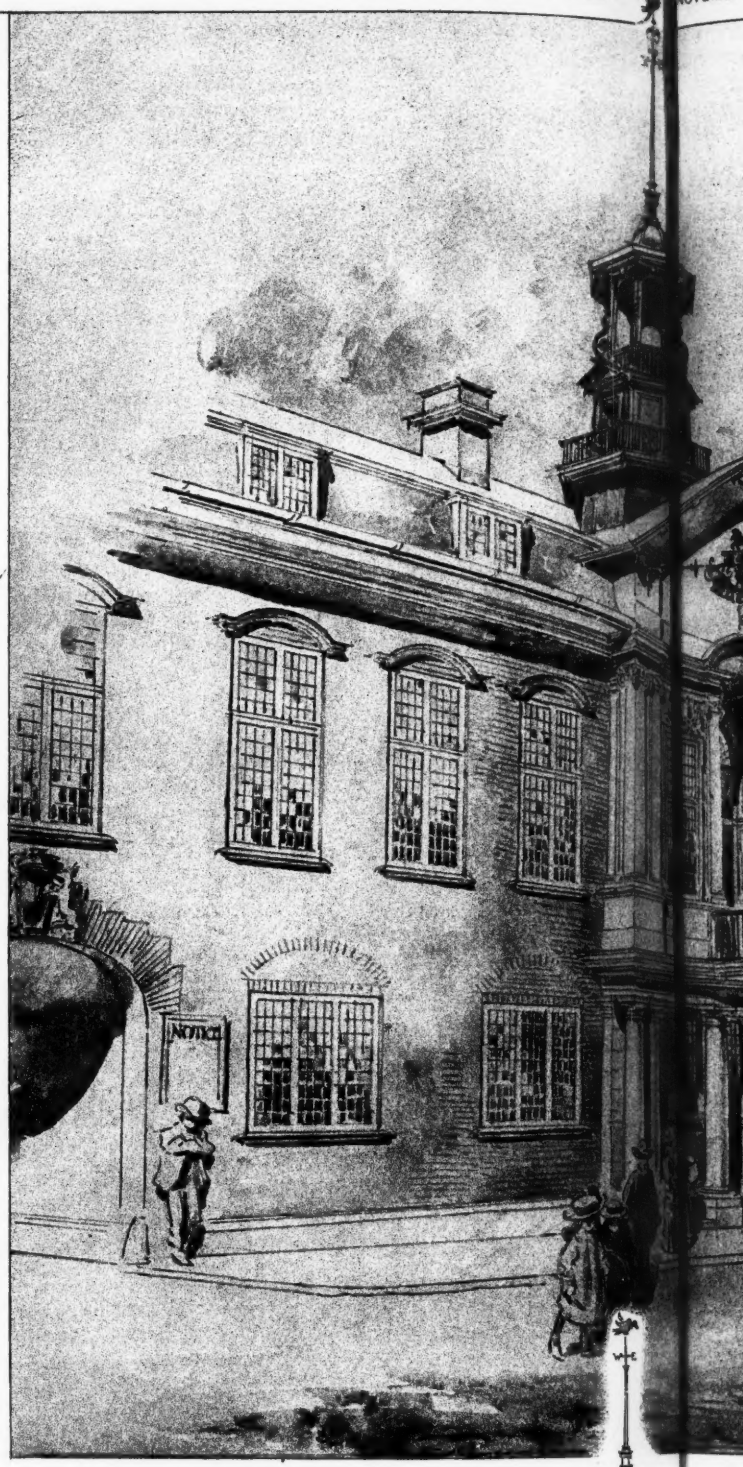

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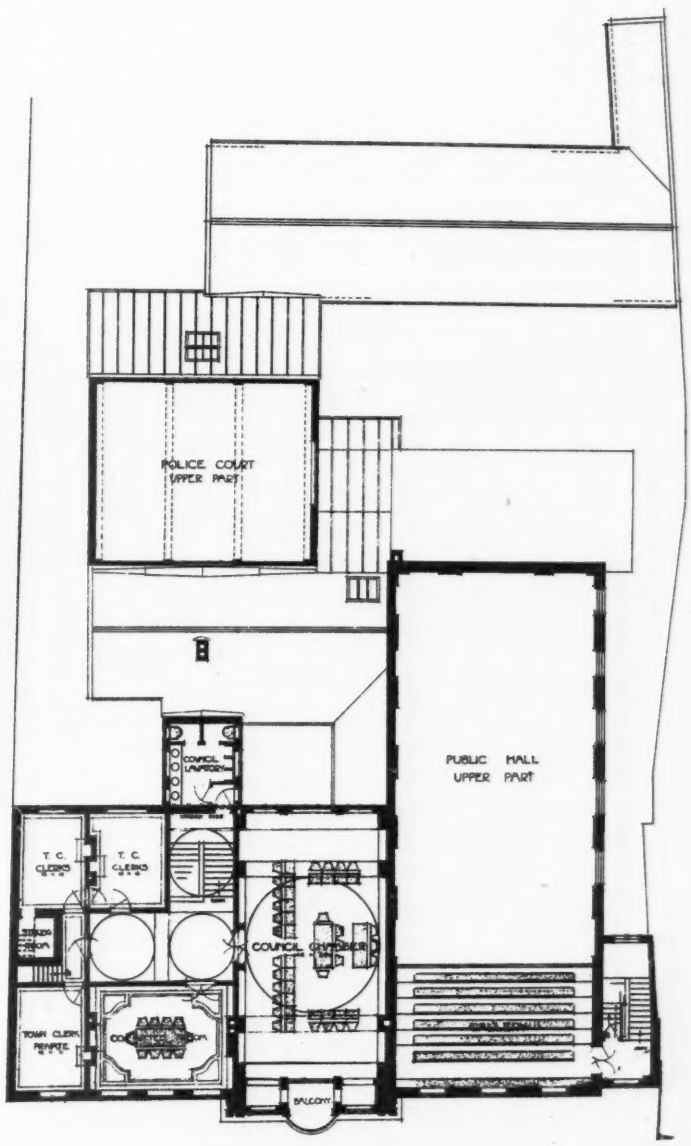

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